Manitoba

Annual Report 1986 - 87

Natural Resources

Manitoba

Minister of
Natural Resources

His Honour
George Johnson
Lieutenant Governor of Manitoba

Your Honour:

I am pleased to present to you the fifty-sixth Annual Report of Manitoba Natural Resources, recording the activities of the department for the fiscal year ending March 31, 1987.

Yours truly,

John S. Plohman

John S. Plohman
Minister

Manitoba

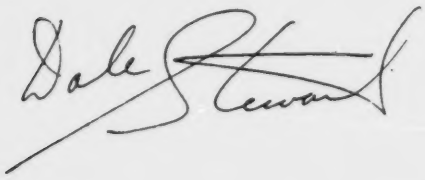
Deputy Minister of
Natural Resources

The Honourable John S. Plohman
Minister of Natural Resources

Sir:

I am pleased to provide the Annual Report of Manitoba Natural Resources for the fiscal year 1986-87.

Respectfully submitted,

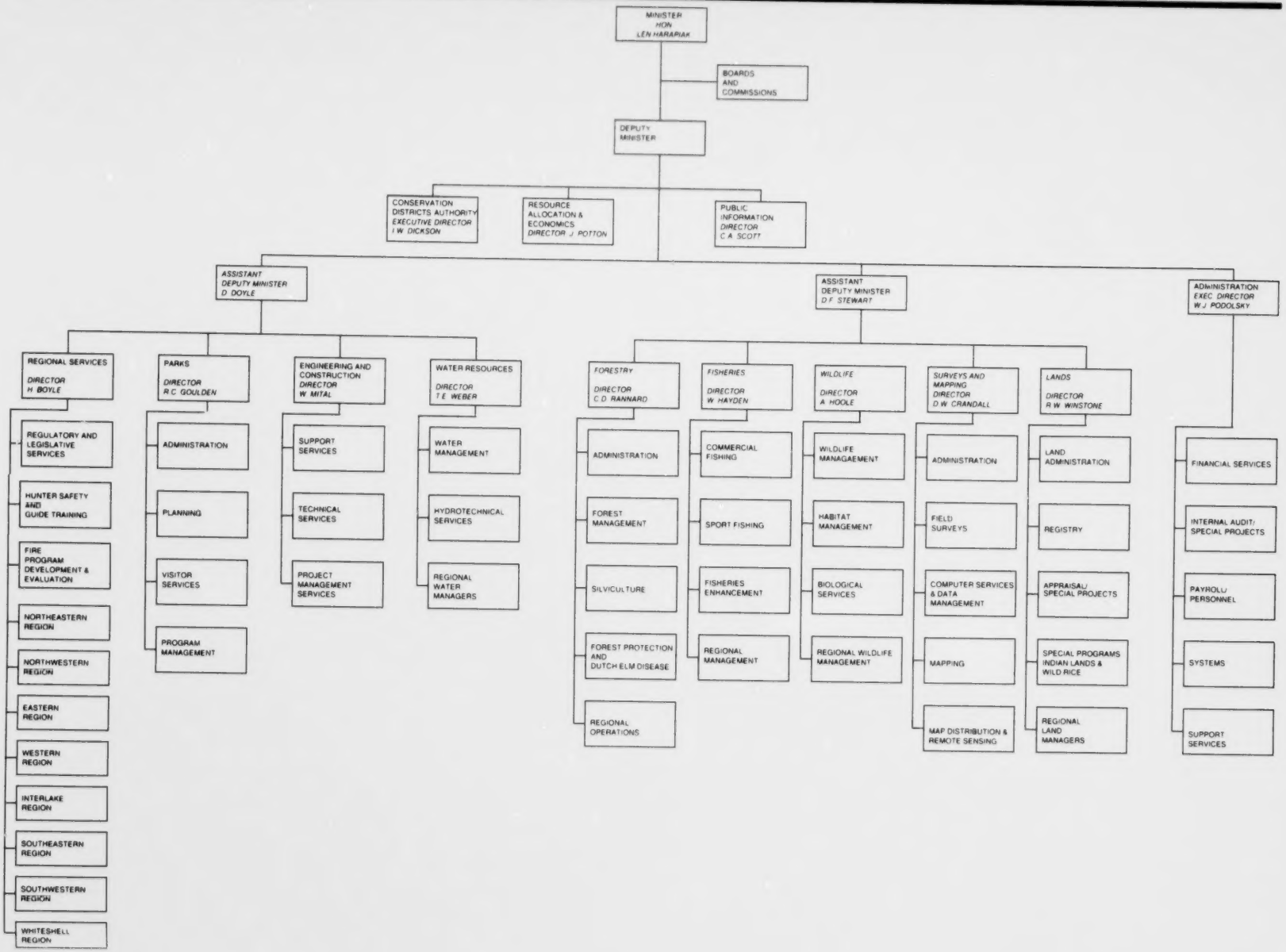


D. Stewart
Deputy Minister

Table of Contents

TITLE	PAGE
Executive Summary	1
Introduction	2
Administrative Services Division	3
Conservation Districts Authority	5
Engineering and Construction	8
Fisheries	12
Forestry	19
Lands	32
Parks	36
Public Information Services	45
Regional Services	47
Resource Allocation and Economics	62
Surveys and Mapping	67
Water Resources	70
Wildlife	79
Appendixes	
Appendix I: Summary of Revenue and Expenditures	90
Appendix II: Summary of Expenditures by Appropriation	91
Legislators' Index	110

Organization Chart — Manitoba Natural Resources
(March 31, 1987)



Executive Summary

During the 1986-87 fiscal year, Manitoba Natural Resources contributed to the quality of life and sustained economic development of the province. In an atmosphere of continued fiscal restraint, the department was able to maintain the level of services through a variety of innovative measures and co-operative undertakings. An emphasis was placed on the wise stewardship of natural resources to ensure the long term viability of renewable resources, while meeting current needs to the greatest possible extent.

The department continued to promote the establishment of conservation districts in the province. Existing conservation districts have successfully involved local residents in forging soil and water management plans for the areas. Projects for soil conservation, fish and wildlife enhancement, and public education have been undertaken in each district. Many municipalities are actively involved in discussions and studies to form additional conservation districts.

The management of the province's fisheries was furthered through the development of a commercial fisheries management strategy. The strategy was intended to rationalize the fishing industry in Manitoba to ensure the greatest benefit to the most number of fishermen within the constraints of the resource.

Sport fishing continued to increase in popularity throughout the province and catch and release angling gained wider acceptance.

Forest renewal was a major thrust during the 1986-87 fiscal year, building upon the efforts made in the last several years. Expanded production facilities for seedlings were completed and both the industry and government undertook a vigorous replanting program. Technological improvements in forest inventory, silviculture and forest management hold great promise for the future.

Activities related to provincial parks were also considerable during the year. Extensive public consultations regarding the Hecla-Grindstone Management plan were completed, while the Bloodvein River in Atikaki Provincial Wilderness Park was designated as a Canadian Heritage River being of national significance. Co-operative undertakings in provincial parks were another highlight, with the establishment of the Friends of Spruce Woods and the Friends of the Whiteshell co-operating associations. These groups have generated a great deal of interest in natural and cultural history in these parks and they intend to offer additional programs and services to complement those provided by the department.

Enforcement activities undertaken by conservation officers and park rangers employed by the department continued to reveal a high compliance rate with various Acts and Regulations administered by the department. The T.I.P. (Turn In Poachers) program once again proved successful in indentifying violations. Undertaken in co-operation with the Manitoba Wildlife Federation, the T.I.P. program continued to be a valuable asset in protecting Manitoba's fisheries and wildlife resources.

Manitoba's water resources, essential to the province's economic activity and quality of life, received special attention this past year due to the introduction of a new Water Rights Act. The new Act was intended to better manage the allocation of water supply and improve the planning and development of the province's drainage infrastructure for precipitation removal.

Wildlife management efforts in Manitoba were also furthered during 1986-87. Co-operative Moose Management agreements aimed at increasing moose populations in the Skownan and The Pas areas were renewed and appear to be having a positive affect on moose numbers. While waterfowl numbers remained low, deer and grouse populations appeared to be improving significantly.

Loss of wildlife habitat remained a concern, but the establishment of an independent board of directors for the Habitat Heritage Corporation holds out hope for the future. Already the corporation has completed several habitat enhancement projects and has embarked on numerous initiatives on its own and in co-operation with other conservation oriented organizations.

Throughout the 1986-87 fiscal year staff of Manitoba Natural Resources continued to work with the public to further the interests of conservation in the province. In all aspects of natural resource management, an emphasis was placed on improved stewardship in order to balance the demands of today with the needs of tomorrow.

Introduction

Manitoba Natural Resources is responsible for the protection, conservation, management and development of Manitoba's forests, fisheries, wildlife, water, parks, and Crown land. Through the management of these resources, the department makes a significant contribution to economic development, creates jobs, provides recreational opportunities, and ensures that the basic needs of subsistence users are met. It also provides protection from floods, wildfires, and other adverse effects of natural resources.

The department includes six branches with clearly defined resource management responsibilities. They are Fisheries, Forestry, Lands, Parks, Water Resources and Wildlife branches. Operational and support services are provided by Regional Services, Engineering and Construction, Surveys and Mapping, Administrative Services, Public Information, and Resource Allocation and Economics branches. The Conservation Districts Authority encourages the establishment of conservation districts and co-ordinates their activities across the province.

The following report highlights the activities and accomplishments of Manitoba Natural Resources for the fiscal year 1986-87.

Administrative Services

This division provides administrative and professional support to the department, ensuring on behalf of the Deputy Minister that administrative policies, procedures and directives are followed.

Financial Services

The Financial Services Branch was responsible for the coordination and preparation of the departmental expenditure and revenue estimates, supplementary information for legislative review, public accounts, variance analysis and quarterly cash flow; control and processing of departmental accounts payable, revenues and receivables; and control of the distribution and sale of wildlife hunting and fishing licences through 700 private vendors and departmental offices.

Personnel Services

The responsibilities of the Personnel Services Branch include recruitment and selection, position classification reviews, payroll and benefits administration, labour relations, staff training and development, workplace health and safety, affirmative action, and employee counselling.

Work proceeded with the implementation of a computerized attendance reporting system. Computer terminals were installed and documentation clerks began training.

The Department's Affirmative Action plan was completed, as was the review of a number of classification specifications for systemic barriers.

The departmental personnel policy manual was completed and distributed to appropriate staff in October. The manual was well received and is being used as a prototype throughout Government by other personnel departments.

The Personnel Branch was granted delegation of staffing authority by the Civil Service Commission effective April 1. A satisfactory audit of activities resulted in continuation of this authority.

The Resource Technician classification series review ongoing over the past few years was suspended by the Civil Service Commission. However, any remaining anomalies will be resolved using the old six level series.

A hearing conservation and noise control program was developed and implemented. Extensive testing of employees' hearing was commenced.

During 1986-87, Personnel Services processed 57 formal competitions, 87 entry level permanent and term appointments, 37 lateral transfers, 3 transfers and promotions, 27 classification reviews, 79 S.T.E.P. student appointments, 1600 departmental employee appointments/recalls, and 638 firefighter appointments/-recalls.

Persons Employed by Manitoba Natural Resources

(March 31, 1987)

		No. of people
Administration & Finance		
• Executive		
• Resource Allocation & Economics		
• Public Information Services		
• Administrative Services Division		
	Permanent	107
Regional Services	Permanent	256
	Term	39
Engineering & Construction	Permanent	179
Water Resources	Permanent	93
Parks	Permanent	52
	Term	4
Lands	Permanent	44
Forestry	Permanent	78
	Term	14
Fisheries	Permanent	64
	Term	3
Wildlife	Permanent	63
	Term	1
Surveys and Mapping	Permanent	72
Conservation Districts Authority	Permanent	9
	Sub-total:	**1,078**
Seasonal Employees (As of August 1/86)		1488
	TOTAL:	**2566**

Systems Services

The Systems Services Section provided support to the department in the analysis, design and implementation of information processing systems. The Section performed feasibility studies at the request of client groups and provided them with an assessment of the existing situation and recommendations for improvement. The section also coordinated the preparation of the department's annual Information Technology Systems Plan, and offered an equipment procurement service.

Along with word processors, many branches further expanded their microcomputer resources. Microcomputer systems were acquired or upgraded in the Wildlife, Fisheries and Forestry Branches. These systems were designed for research and analysis. Lands Branch acquired systems for data entry of Crown Land information, and for computer-assisted drafting in its Wild Rice Section.

The most significant hardware acquisition to take place in the department during the 1986-87 fiscal year was the continued conversion to digital mapping in the Surveys and Mapping Branch. A ten-fold increase in map production is anticipated upon completion.

Other areas of the department also expanded their computer resources. Forestry upgraded both the software and hardware components of its Forest Inventory System. Water Resources and Lands expanded their terminals, as did Administrative Services in anticipation of the implementation of the Payroll/Personnel Information System.

The most significant system under development by the section during the year was the Payroll/Personnel Information System. It was designed to automate certain functions performed in the Payroll Section. Upon introduction, this system will provide departmental management with information not previously available to them. Annual leave statistics, employee benefits and entitlements and financial reports will be readily accessed through this system.

The section also introduced two major microcomputer systems during the year. Within Revenue Accounting, the General Ledger which was handled by the existing bookkeeping machine was converted to run on a microcomputer. This system is much better equipped to produce the required reports. Another major undertaking during the year was the automation of the Parks statistics report. Previously compiled manually, the system was set up to automate the compilation of the various statistics necessary to produce the book.

Operational Support Services

Operational Support Services provided services in the areas of communications, office and storage accommodation, employee housing, clothing, office equipment, inventories, insurance, vehicles, warehousing and library services.

A major focus for the section was the Records Management Program. It involved the documentation and scheduling of existing and inactive files.

Library services continued to be an important contributor to the department, with some 44,000 books, 9,000 reprints, and 325 periodicals available.

Conservation Districts Authority

The Conservation Districts Authority is responsible for encouraging the establishment of conservation districts in Manitoba. It also provides program implementation and planning services to existing conservation districts.

The Conservation Districts Authority (CDA) completed its first entire year of operation with a full staff complement of eight. The highlight of the year was the beginning of the resource management planning process for the existing conservation districts. For the first time since the program began several years ago, one central agency has been given the sole responsibility of assisting the boards in producing their resource management plans. The results have already begun to show and will be more evident in the next few months as the program's first resource management plans are finalized.

Throughout the four-step planning process, there is a heavy emphasis on local decision making and priority setting. A great deal of board effort is spent inobtaining the views and opinions of the local people. In step one, the resources of the area are evaluated. The second step is the preparation of a background report which describes for the public the resource issues and management options for the watershed. This publication is distributed to every household in the district.

After a series of open houses, public meetings and workshops with member municipalities, a draft management plan is developed as step three. This, too is distributed to all households in the district, requesting public comment. It outlines the Board's vision for managing the resources of the area for the next 20 years. Included is a program budget for the first five years of the plan. The plan will be reviewed periodically to ensure it continues to meet the needs of the people of the area.

Once the draft plan has been reviewed by district ratepayers, the board produces the final resource management plan; the final step in the planning process.

The entire process is expected to take approximately 14 to 18 months. The Turtle Mountain Conservation District Board was the first to undertake the development of its plan. The final plan is expected in late autumn, 1987. The Turtle River and Alonsa districts have also begun the process.

Proposed Districts

As the presence and new mandate of the CDA became better known, the number of requests for information about the Conservation District Program increased. Several areas of the province have expressed interest in becoming involved in the program.

As a result of interest generated in the previous year, several meetings were held to discuss the possibility of forming a conservation district in the Pembina Valley area. Over the summer, eight municipalities including towns and villages were involved in the discussions. Four municipalities including Louise, Lorne, Pembina and Argyle, requested that a detailed proposal for a district be prepared for their review.

Interest in a conservation district for the Elgin Plains area south of Brandon was expressed early in 1986. Meetings with local municipalities were held and several alternatives for a district were examined. However, the general response by the municipal councils involved was not to pursue a conservation district at this time.

The establishment of a conservation district in the Washow Bay area in the Interlake was being considered. The district could provide a mechanism for managing the conservation activities in the area presently being developed under the Agri-Food Agreement. Precipitation removal programs as well as soil management programs were a concern. Work is continuing on this initiative.

Conservation Districts Authority staff met with municipalities in the Tobacco Creek-Shannon Creek area to provide information about the program. The meeting was initiated by the Deerwood Soil Management Association. A district is being considered as a means of carrying on the association's conservation activities and to expand conservation programs throughout the area following conclusion of the Canada-Manitoba Agri-Food Agreement. A workshop was held to examine possible district boundaries, financial implications and local representation. Using the results of this workshop, a draft proposal for a district was under development to serve as a basis for discussion in the upcoming months.

The Overhill Drain area south of Portage la Prairie has suffered periodic flooding of agricultural land in recent years resulting in substantial crop loss. Area residents approached the province for assistance in solving this problem. The province agreed to provide financial support to assist the area with its water problem contingent upon the establishment of a conservation district to address the water and other resource management problems in the area.

Meetings between the CDA and the rural municipalities of Portage la Prairie, South Norfolk and Grey have examined possible district boundaries, municipal representation and financial implications. Discussions were expected to continue into the 1987-88 fiscal year.

Other activities include:

- The RM of Ethelbert passed a resolution expressing their renewed interest in the program.

- The LGD of Reynolds expressed interest in forming a district in the Whitemouth River area.
- The RM of La Broquerie requested the assistance of the CDA in providing information to their RM and neighbouring rural municipalities. A meeting was scheduled for early in the new fiscal year.
- An informational meeting was held in January with the LGD of Grahamdale and the RM's of Siglunes and Eriksdale. Further meetings were expected in the fall of 1987.
- In February, a meeting was held in Russell to discuss water and land management in a drainage area that straddles the Manitoba- Saskatchewan boundary. Representatives from both sides of the border agreed to continue their discussions related to the possibility of setting up a conservation district.
- The Bell River Farmers Co-op had expressed their desire to establish a district in the area around Bellsite, north of Birch River. However, the area being considered was too small to support a district.

Districts Reports

Whitemud Watershed Conservation District

The major portion of the 1986 annual works program centred on infrastructure maintenance and crossing repair. Several agricultural infrastructure projects continued from previous years including improvements of Perch Creek, the Youill Drain, and the Orangeville Drain. Other projects included reconstruction of 2.5 kilometers of the Beaudin Drain and heavy maintenance work on three kilometres of Rat Creek.

Several waterway stabilization projects were completed in the upper portions of the watershed.

Under the Soil Conservation Program, more than 3,200 hectares were seeded to forage by 329 landowners. One hundred and five kilometers of shelterbelts were planted, including eight kilometers for wildlife. Three new wildlands projects totalling more than 255 hectares were established in cooperation with local landowners.

Public education received attention through several programs. More than 25,000 trees were planted by Boy Scouts under the Trees for Tomorrow program. School presentations and tours were conducted at all grade levels. The district supported the Manitoba Conservation Districts Association's Youth Speakers competition and Conservation Farm Family Award program. Activities related to National Soil Conservation Week were also carried out.

Under the Agri-Food Agreement, conservation tillage demonstrations and gully stabilization projects were undertaken. Total expenditures under the program were $37,000.00. The District also cooperated with Prairie Farm Rehabilitation Administration (PFRA) in a field pea plough-down demonstration.

Turtle Mountain Conservation District

The Turtle Mountain Conservation District Board began work on a long range resource management plan for the district in 1986. The plan was intended to address the resource management issues facing the district over the next two decades. The public has been involved in the planning process through direct representations and public meetings. The final plan was expected to be completed by the autumn of 1987.

The board distributed pubications at various stages of the process to keep the public informed of planning activities.

The board purchased a parcel of land near Metigoshe Lake to develop an environmental education centre. Plans are to establish intepretive trails for summer use that would be used as cross-country ski trails in winter. The area will provide local residents with recreational and educational opportunities.

The Forage Seed Assistance program distributed sufficient seed to plant 1,760 hectares. During the eight years of the program, the district has distributed enough seed to plant 13,000 hectares. About eight kilometers of shelterbelts were planted, gully stabilization work continued and forage plants were seeded on newly constructed road side ditches. About 24 kilometers of runway stabilization work was completed.

In co-operation with Ducks Unlimited, two small wetland developments were completed.

Turtle River Watershed Conservation District

The Turtle River Board initiated the preparation of a resource management plan in the fall of 1986. A discussion paper was distributed throughout the district in March, 1987 to solicit public input. A final plan was expected by mid 1988.

In conjunction with the management plan, the board has been considering strategy options for the management of some 700 crossings in their district.

To further encourage local autonomy, the Turtle River Board began directly administering its budget from its Ste. Rose office and managing its own labour crew.

Alonsa Conservation District

In September, 1986, the Alonsa Board hired its first district manager and constructed a new office in Alonsa. At the same time, the board began preparing a resource management plan, assisted by a consultant engaged by the Conservation Districts Authority. A final plan was expected in 1988.

Ducks Unlimited undertook operation of Phase I of the Portia Project, a large water management project in the Alonsa Conservation District.

The board placed a high priority on increasing the amount of external funds coming into the Alonsa Conservation District, especially in the field of fisheries and wildlife management.

Cooks Creek Conservation District

The Cooks Creek Diversion project continued in 1986-87. When completed, the project will convey part of the flow from Cooks Creek to the Red River Floodway, alleviating flood problems downstream.

A study for the development of the tributary network feeding into the diversion was completed in the fall of 1986. It gives the board guidelines for developing a system to alleviate crop losses from rainfall.

The reconstruction of the North Bibeau Drain continued as the major project in the area.

Conservation District Expenditures, 1986-87

District	Provincial Grant	District Share	Total
Whitemud	$904,495	$304,675	$1,209,170
Turtle River	423,715	165,500	589,215
Alonsa	155,290	51,355	206,645
Turtle Mountain	246,790	89,390	336,180
Cooks Creek	206,990	70,650	277,640
	$1,937,280	$681,570	$2,618,850

NOTE: The Conservation Districts Authority prepares a more detailed Annual Report based upon the calendar year that is tabled separately in the Legislature.

Engineering and Construction

This branch provides engineering design, surveys, investigations, project management services and related support services to other branches within the department, as well as to municipalities, conservation districts and other government agencies; operates all flood control works during flood emergencies, co-ordinates all flood fighting activities and makes assessments of claims in respect to flood fighting costs and restoration works.

1986-87 Program Summary

Client	Expenditures (000's)
Water Resources	$6,156.9
Parks	518.7
Conservation Districts	2,120.6
Forestry	2,097.6
Fisheries	21.5
Wildlife	77.6
Lands	5.5
Total	**$10,998.4**

1986-87 Flood Damage Assessment & Repair

Flood Damage Claims	$600.0
Provincial Waterway Damage Completed	711.0
Total	**$1,311.0**

Technical Services

Technical Services provided engineering design services, consulting engineering services, construction inspection and soils laboratory services. The clients included other branches within Manitoba Natural Resources as well as Conservation Districts, municipalities and several other government departments or agencies. Plans and specifications were prepared for approximately 138 projects, 147 design reports were completed.

Design work was completed on the cold storage building at the Pineland Nursery. This completed all of the major projects at both the Pineland Nursery at Hadashville and the Clearwater Nursery at The Pas.

Design work was completed on the Cooks Creek Diversion, while work continued on several major projects such as the Pasquia Polder III and the flood protection system at Ste. Rose. Preliminary work was started on the Cooks Creek lateral study, the North Duck River Dam study, the Washow Bay drainage plan and the Garland River study.

Project Management Services

The Project Management Services division provided a variety of engineering services to other branches of the deparment and to other government agencies. Typical services included project management, construction and maintenance, field surveys and investigations, as well as general engineering consulting.

Technical Services 1986-87 Summary

Design Projects	
Water Resources	97
Parks	14
Forestry	5
Fisheries	2
Municipalities	20
Total	**138**

Geotechnical Lab. Services	**No. of Tests**
Natural Resources	3,104
Highways	2,749
Transport Canada	11
Manitoba Water Services Board	178
Government Services	196
Total	**6,238**

Consulting Reports	
Water Resources	94
Parks	6
Forestry	2
Fisheries	3
Lands	2
Wildlife	1
Municipalities	29
Manitoba Water Services Bd.	6
Rivers & Streams Authority	2
Disaster Assistance	2
Total	**147**

During the early part of the year, the majority of staff were engaged in emergency flood operations due to heavy spring runoff and accompanying rains. The division dealt with over $2 million in public sector flood damages.

The division's maintenance section completed a number of construction and maintenance items including a major project at Gull Harbour. The section also initiated a program directed towards improving maintenance capability of park facilities at Birds Hill, Grand Beach, Falcon Lake and West Hawk Lake.

Surveys & Investigations

Client	Requests
Water Resources	212
Parks	11
Forestry	10
Fisheries	2
Wildlife	1
Lands	4
Regional Services	1
Total:	241

Maintenance Management

Client	Emergency Repair	Consultation	Total
Parks	13	22	11	46
Forestry	3	16	11	30
Water Resources	4	6	3	13
	20	44	25	89

Interlake Region

Work undertaken on behalf of the Water Resources Branch consisted of the inspection, maintenance, and operation of approximately 1600 km of provincial waterways, 230 bridges, and 10 provincial dams.

The Assiniboine River Flood Control System was operated. Repairs and general maintenance, including the ice guide booms were made to the Portage Diversion.

The Provincial Waterway Capital Program included projects on the Camper Drain and the Fish Line Drain.

The Capital Bridge Program included replacing three bridges with culvert crossings and ordering culverts to replace four bridges next fiscal year. Also, four bridges were closed to traffic.

Due to an abnormal spring runoff, repairs were made to bridges and provincial waterways at a cost of $275,000.

Projects for the Parks Branch included maintenance, grading and improvements to the drainage of the access road to Grindstone Point.

At the Gull Harbour Marina, plans were completed for the provision of services. The fuel dock was completed and electrical service was completed. A parking lot was constructed and the car and marine gas services were constructed along with a viewing tower.

At Netley Creek and the Red River, the shoreline was protected with rip-rap.

Projects for the Forestry Branch included installing two sets of culvert crossings and constructing four kilometers of road.

Services provided to the Fisheries Branch included the construction of Mantagao Lake Control Dam. Maintenance continued on the Fairford Fish ladder.

Work for the Wildlife Branch included general maintenance of the infrastructure and the completion of the supply channel, Dewar Drain, and Parks Creek at Oak Hammock Marsh.

Southwestern Region

This region provided technical support and engineering services to the Whitemud and Turtle Mountain Conservation Districts as well as to the other branches within the department. The primary emphasis within the Whitemud Conservation District program was on crossing replacement, with 14 larger crossings being replaced. The construction projects included Perch Creek, Image Creek, Gillespie Drain, and Big Grass River. In the Turtle Mountain Conservation District the major emphasis was on the Runway Stabilization and Grassed Waterway programs. Projects under these programs included Medora creek, Waskada creek and numerous smaller waterways.

A large survey project was undertaken in the Plum Lakes area on behalf of the Wildlife Branch. The region also carried out a number of smaller maintenance and construction projects on provincial waterways and provided engineering services and advice on several parks and fisheries projects. Various smaller drainage surveys were also completed at the request of local municipalities.

Western Region

Work undertaken on behalf of the Water Resources Branch consisted of the inspection, maintenance and operation of infrastructures in the Western Region consisting of approximately 675 km of designated Provincial Waterways, 22 flood and erosion control dams (including Lake of the Prairies) and over 150 bridges over provincial waterways. Major activities associated with the Water Resources maintenance program

included operation and refurbishing the Mile 14 Turbine Pumping Unit and the complete refurbishing of the diesel and pump at the Polder II outlet at The Pas. Various sections of the Grace Lake dyke were repaired.

Extensive structural repairs were undertaken on the Goose River dam at the outlet of Lake Athapapuskow. Emergency repairs to the Upper valley dam outlet conduit were required due to excessive erosion. Approximately 5 km of the Mink Creek dykes were reshaped. Material and right of way were purchased for the construction of a sheet piling drop structure on the Avonlea Drain. Culvert crossings were constructed on the Craigsford and Swinowski Drains under the bridge replacement program. Capital projects included reconstruction of the Hamlin Drain and purchasing the right of way on the Jackfish Creek project for reconstruction in the 1987-88 fiscal year. Preliminary engineering continued on the Pasquia Polder III project, right of way was purchased for the preliminary stages of the project and construction was commenced on the Pasquia Lake Drain. Preliminary engineering investigations continued on the North Duck River Headwater Storage design study and the Garland River Diversion design study. Designs were completed on the Ste. Rose du Lac flood protection project in preparation for right of way purchase in 1987-88.

Work of a preliminary engineering nature for Parks Branch consisted of surveys and designs for electrifying Campers Cove Campground and for the future construction of a marina at Asessippi Provincial Park. Bakers Narrows sewage system was completed and material was purchased for the Manipogo Park sewage line replacement project. Construction of the Asessippi shower building was completed and opened to the public in June. Campers Cove Lagoon construction was started in the fall and a well was drilled at Steeprock Lake.

Work for the Forestry Branch at Clearwater Provincial Forest Nursery consisted of completing two contracts for the construction of eight greenhouses and two service buildings. Emergency power supply was extended to the newly constructed greenhouses. Assistance was also provided to the nursery staff to complete their onsite drainage program.

Engineering services were provided to the Alonsa and Turtle River Conservation Districts. Work consisted of general channel maintenance and repairs to various structures and crossings in the area. Extensive flood restoration work was carried out in both districts. The Van de Poole Drain was reconstructed in the Turtle River watershed Conservation District and crossings were constructed on the Hansen creek, Irwin Drain, Thompson Drain and the Boles Drain. In the Alonsa Conservation District the Senkowski Drain was reconstructed and crossings were constructed onthe North Leifer Drain, Garrioch Creek and the Kjartanson Drain.

Work undertaken for the Fisheries Branch consisted of the design and construction of low head weirs to enhance the pickeral spawning habitat on Mink Creek.

Work undertaken for Crown Lands included survey assistance on two Crown land cottage subdivisions at Waterhen.

Eastern Region

Various surveys were conducted for the Cooks Creek Conservation District, local government districts, municipalities and various branches of the department.

Maintenance and construction work were undertaken on approximately 1147 km of Provincial Waterways and flood control works for the Water Resources Branch. The Red River Floodway was operated in the spring.

Six major drain crossings were replaced and excavation on the Bachman West Drain was completed. Work continued on the Pansy Drain and the Libau Drain. A contract for dyke construction on the south west corner of Emerson was completed along with the south dyke at West Lynne. Drainage improvements were undertaken along the south side of Dominion City.

Work continued on the Cooks Creek Diversion. One contract was completed with another nearing completion.

A number of projects were completed for the Parks Branch including sewer and water upgrading at West Hawk Lake, sewer line upgrading at Falcon Lake, an addition to the Golf Pro Shop, major roof repairs to the Golf Pro Shop and restaurant, water wells at Bird Lake and Davidson Lake and building services for a future shower building at Big Whiteshell Lake.

A number of projects were completed for the Parks Branch including sewer and water upgrading at West Hawk Lake, sewer line upgrading at Falcon Lake, repairs and an addition to the Golf Pro Shop, water wells at Bird Lake and Davidson Lake and building services for a future shower building at Big Whiteshell Lake.

A subdivision road at Pinawa Bay was upgraded for the Crown Lands Branch.

Construction commenced on a bareroot cold storage and packaging building for the Pineland Nursery at Hadashville along with other projects undertaken for the Forestry Branch.

Engineering services were provided to the Cooks Creek Conservation District and their annual program was undertaken and completed.

South Central Region

Work carried out on behalf of the Water Resources Branch consisted of inspection, maintenance and operation of the infrastructure in the South Central Region consisting of approximately 1,150 km of provincial waterways, 19 dams, 330 bridges, 40 gradient control structures, 5 valley town dyking system and the west dyke of the Red River Floodway.

The Valley Town Dyking Upgrading Program which began in 1984 was continued to near completion. A contract for sewer line relocation was completed in the village of St. Jean Baptiste. A construction order was executed for the construction of a reinforced concrete discharge chamber in Letellier. Also, a contract was awarded and 70% completed for a storage and operations building in the town of Morris.

The Capital Reconstruction Program saw the installation of a large culvert crossing E 5-4-4W on the South Shannon Creek. Legal survey field work and the preparation of plans were completed in sections 2, 3 and 4-4-4W for future reconstruction when funding is available.

Under the Bridge Replacement Program culvert installations were carried out at four locations on the Blackhurst Drain (N 31-6-1E), Manness Drain in (27-7-1E) and the Crooked Lake Channel (E 15 and 16-10-5W). Culverts were purchased for three locations on the Elm River Relief Channel, Rosebank Drain and the Mill Creek. These crossings are all multiple pipe with culverts sizes ranging from 1600 mm to 2200 mm.

Engineering survey and design services were provided to various municipalities in the region. Some 69 requests for services and advice were received and actioned during the year. As well, 61 permit elevations for construction of homes, machine sheds, barns, dykes, etc. under the Water Resources Administration Act were established in the designated flood area and subsequently, compliance surveys were performed.

Fisheries

This branch develops and implements fisheries management programs to provide the greatest benefit to Manitobans by maintaining or enhancing fish populations in the province; monitoring the effects of harvest and habitat alterations on fish populations; operating the provincial fish hatcheries to increase and/or sustain fish resources; and allocating the fishery resource to ensure the best return to Manitobans. The branch also administers the Northern Fishermen's Freight Assistance Program for commercial fishermen.

Commercial Fishing

Development of a management strategy for Manitoba's commercial fisheries was initiated in 1985-86. The purpose of this strategy is to ensure a consistent and coordinated approach to commercial fisheries management across the province, to provide guidance in management activities and assist in decision making, and to guide the development of lake or fishery specific management plans.

The Northern Fishermen's Freight Assistance Program (NFFA) continued to assist commercial fishing operations in the north. Payments amounting to $290,127 were paid to 614 commercial fishermen for the 1986 summer season. Payments for the winter season of 1986-87 to fishermen amounted to $70,300.

During the open water fishery of 1986 and winter fishery of 1986-87, commercial fish production in Manitoba was 27 million pounds. This was 1.7% lower than the previous year. Initial payments to commercial fishermen were $16.8 million, up by 4.4% from the previous year. The Freshwater Fish Marketing Corporation reported a favourable financial situation during the 1986-87 fiscal year and substantial final payments to fishermen were anticipated.

The quota entitlement system of allocating commercial fishing rights on Lake Winnipeg has been in place since the spring of 1986. To date, 350 transfer applications have been received, of which 251 were approved and transferred. The remaining were either pending, withdrawn or rejected. Initially the number of fishermen holding quotas increased, however, more fishermen have consolidated their quotas and family units are increasing. Based on discussions between Fisheries Branch and the Lake Winnipeg Fisheries Management Advisory Board, a number of recommendations regarding changes to the conditions of transfer for specific Community Licencing Areas were approved by the Minister of Natural Resources.

An experimental fall commercial fishery in the Sturgeon Bay area of Lake Winnipeg was granted to Dauphin River residents. Traditionally, fall fishing in Sturgeon Bay was not allowed because of a major whitefish spawning run during the fall. Approximately 73,132 kg of whitefish, walleye, sauger and pike were harvested during the fall season generating $77,500 in revenue for 25 fishermen. Manitoba Natural Resources closely monitored this fall fishery and results of its performance and effect are being studied. Discussions will be held with fishermen before a decision is made to continue this fishery.

The Lake Manitoba commercial fishery is the third largest in the province. In 1982 it supported approximately 400 licenced commercial fishermen, but by 1985 that number had grown to 650. The Lake Manitoba Commercial Fishermen's Association, in consultation with Fisheries Branch, proposed the establishment of an upper licence limit for the 1986-87 winter fishing season. For a number of years fishermen had been concerned about the economic effects of oversubscribing this fishery. This proposal was accepted by the Minister. As a result, a freeze limiting licences to the 1985 level was imposed. With this limit in place, a controlled entry licensing system is being developed in consultation with the Lake Manitoba Commercial Fishermen's Association.

In June 1986, the Minister of Natural Resources announced a three year closure for the Lake Winnipegosis open water commercial fishery. This closure was intended to allow walleye stocks to rebuild and allow future harvest at increased levels. This fishery has been declining both biologically and economically for over 20 years. It is characterized by too many fishermen and too few fish. An employment package is coupled with this closure to provide income for open water fishermen. A Lake Winnipegosis Employment Opportunities Liaison Committee, comprised of three commercial fishermen and two provincial government representatives, was established last summer. This committee played a major role in reviewing and administering the 1986 employment projects. Seventeen fishermen licenced for summer fishing participated in the work projects. In addition, four fishermen found work with private businesses and their salaries were subsidized under the project fund. A fishery rehabilitation management plan was initiated to address resource and industry concerns.

Regular meetings continued with the Lake Winnipeg Commercial Fisheries Management Advisory Board, the Lake Winnipegosis Commercial Operators and Fishermen's Association and the Lake Manitoba Commercial Fishermen's Association. These organizations acted in an advisory capacity and enabled commercial fishermen to contribute to the management of their fisheries.

Fisheries Branch, in cooperation with Manitoba Northern Affairs and the Northern Flood Committee, responded to fishing claims submitted to Manitoba pursuant to Article 19.4 of the Northern Flood Agreement. Several meetings were held with the Norway House, Nelson House and Split Lake fishermen's association regarding their specific claims. Technical input was provided and an overall strategy and process for fishing claim resolution was developed.

Trout Farming

There was a resurgence of interest in trout farming in 1986 with an increased number of inquiries from both the public and industry. The department has been working with other agencies towards a more co-ordinated trout farming program. The recognition of fish farming as a legitimate farming activity for taxation, funding and other purposes was identified as a priority.

A total of 27 fish farming licences were issued in 1986 for commercial operations and fish farms on Crown land. It is estimated that there are an additional 300 to 400 recreational or hobby fish farms on private land that do not require a licence to operate, most of which occur in southwestern Manitoba.

Sport Fishing

Sport fishing in 1986 will be remembered as the year of the catfish. Channel catfish have always been in the Red River system and more and more people have been fishing them. This year their popularity exploded with several international magazine articles and television fishing programs identifying the Red River as the best trophy catfish area in North America. The Town of Selkirk erected a statue of "Chuck the Catfish" and declared Selkirk as the catfish capital of the world. Emerson smilarly declared itself a catfishing centre. A record 776 trophy catfish over 9 kg were entered in the province's Master Angler Awards program. (Approximately half of these were released.)

The popularity of the Red River for sport fishing continued to increase with very heavy use during both summer and winter. Of nearly 1000 master angler walleye caught, more than 600 were caught in the Red River. The status of the Red River as a trophy fishery for both walleye and catfish remained important to the tourist industry. A joint management process involving users and government was initiated in the fall of 1986.

A national sport fishing survey conducted during the past year indicated that 187,170 licenced anglers in Manitoba fished 2.7 million days and caught 9.5 million fish. Some 55% of all fish caught were released. This compares with 48% and 42% of all fish caught which were released in 1980 and 1975 respectively. Licenced anglers in Manitoba spent approximately $217 million dollars in 1985 on sport fishing related activities.

In order to determine the number and location of fish derbies, a permit system was introduced for those persons holding a derby or fishing tournament. This will allow the department the opportunity to assess the impact of fish derbies on specific locations.

In co-operation with the Manitoba Bass Anglers Association, smallmouth bass were angled from George Lake and transferred to Mud Turtle, War Eagle, Horseshoe and Big Clearwater Lakes in Whiteshell Provincial Park. It was anticipated that this transfer of adult fish will establish populations in these lakes and provide more angling opportunity for this species.

A number of innovative regulatory measures were initiated during 1986-87. A special program to protect native brook trout in the lower Nelson River system was implemented in 1986. This included a requirement for all anglers to obtain a special permit which allows an annual harvest of only 4 brook trout. This regulation will be in place during the construction phase of the Limestone hydro-electric dam in the Gillam area.

A restriction that allowed anglers to use only barbless artificial lures was introduced on McHugh Lake. This regulation should maintain the high quality brown trout fishing in this small lake.

Two fly-in lodge lakes, Nueltin and Recluse, were designated as no harvest lakes. All trophy fish had to be returned to the water unharmed. Only fish for shore lunch could be kept and these had to be smaller fish. This should help maintain the exceptional trophy fishing in these two lakes. Acceptance by anglers and lodge guests has been very good.

Bait Fishing

During the 1986-87 season, 41 bait fish licences covering 284 bait fish blocks were issued. Approximately 93,500 kilograms of frozen and packaged bait fish were processed by the bait fishermen.

In addition, five licenced live bait dealers sold approximately 38,000 dozen live bait fish. The moratorium on expansion of the live bait fish industry was continued and no new live bait fishing operations or outlets were licenced. The primary concern regarding the use of live bait fish is a threat to fish stocks and the environment from the introduction and transfer of undesirable species via the bait bucket.

Angling Licence Sales and Revenue, 1977-78 to 1986-87

Year	Resident Licences			Non-Resident Licences Conservation Licences			Non-Resident Licences			Total Licences	
	Number	Fee	Revenue	Number	Fee	Revenue	Number	Fee	Revenue	Number	Revenue
1977-78	148,289	3.30	452,849.70	9,175	5.50	48,401.25	28,363	11.00	305,800.50	185,827	807,051.45
1978-79	156,553	3.30	477,979.15	10,918	5.50	57,569.75	29,929	11.00	322,571.00	197,400	858,119.90
1979-80	155,790	3.30	475,621.75	9,590	5.50	50,534.25	31,029	11.00	334,312.75	196,409	860,468.75
1980-81	159,584	3.30	487,384.20	8,658	5.50	45,612.50	32,353	11.00	348,565.25	200,595	881,561.95
1981-82	159,233	3.30	486,394.90	8,439	5.50	44,369.50	32,037	11.00	344,723.50	199,709	875,487.90
1982-83	164,384	5.00	741,087.50	3,777	12.00	43,502.50	28,561	20.00	557,353.50	196,722	1,341,943.50
1983-84	157,724	5.00	710,986.50	3,592	12.00	41,346.50	29,852	20.00	582,435.00	191,168	1,334,768.00
1984-85	154,489	5.00	696,541.50	3,443	12.00	39,645.00	30,268	20.00	590,545.50	188,200	1,326,732.00
1985-86	154,602	6.00	851,476.00	10,325	15.00	149,824.00	22,239	30.00	656,289.00	187,166	1,657,589.00
1986-87	158,412	6.00	872,568.00	12,536	15.00	181,906.50	21,809	30.00	643,571.00	192,757	1,698,045.50

NOTE: Revenue figures are net (less vendor's commission).
Non-Resident 3 day Licences were discontinued in 1985-86.
Non-Resident Conservation Licences were introduced in 1985-86.

Fisheries Enhancement

A monitoring program to determine the impact of hydroelectric development on fisheries resources continued on the Churchill and upper Nelson River systems. The decline in abundance and change in species composition of fish communities below Jenpeg in Cross Lake appeared to be continuing due to the altered flow regime caused by Lake Winnipeg regulation.

A study was initiated to identify walleye fry stocking locations based primarily on food availability in Dawson Bay on Lake Winnipegosis. This study was undertaken as part of the effort to rehabilitate the Lake Winnipegosis commercial walleye fishery. In addition, information gathered will be used to develop provincial guidelines that identify optimum habitat types for the survival of stocked walleye fry.

Studies comparing different walleye fertilization techniques and the use of elevated water temperatures to enhance walleye egg survival in fish hatcheries were conducted. Recommendations were provided to hatchery staff to increase the production and survival of walleye eggs.

An interim report dealing with impacts from hydroelectric developments on brook trout and other fish resources in the lower Nelson River was completed. The report included a lake sturgeon population and movement study, a habitat classification system for small Nelson River tributaries, and studies of brook trout spawning areas.

A study continued on eight small lakes in Duck Mountain Provincial Park to determine sustainable yield from perch, black crappie and bass stocks and the development of new recreational fishing opportunities within the park.

Angler catches and bait fish harvests on the Red River were precisely estimated. Data collected will be used to improve fisheries management on the lower Red River.

The Board of Directors of the Manitoba Habitat Heritage Corporation approved 19 projects aimed at protecting or improving important fish habitat. The projects involved lake aeration and water level control to prevent fish winterkill, stream rehabilitation and construction of walleye spawning rapids, construction of a fishway, courses on stream rehabilitation, lake reclamation, feasibility studies, and protecting trout streams from livestock or machinery disturbance.

Commercial fishing waters were stocked with 87 million whitefish fry and with 64 million walleye fry of which approximately 21 million walleye fry were stocked in rearing ponds for later release to fishing waters as fingerlings. Over 200 sport fishing waters were stocked with a variety of species.

Numbers of Fish Distributed to Sportfishing Waters From Fish Hatcheries 1985-86

	Fry	Fingerlings	Yearlings	2 Years & adults
walleye	23,800,000			
northern pike	400,000			
muskellunge	100,000			
perch				6,800
smallmouth bass				120
black crappie				114
lake trout		142,000	237,000	
splake		104,000	105,000	
rainbow			39,000	29,000
brook trout			4,400	600
brown trout			18,000	

Fishermen Employed in Manitoba's Commercial Fishery, 1985-1986

	Northern Lakes	Lake Winnipeg	Lake Manitoba	Lake Winnipegosis	Other Lakes	Overall
Summer						
Licence Holders	469	829	56	45	92	1,433
Hired Men or Helpers	127	194	0	106	0	420
TOTAL	596	1,023	56	151	92	1,853
Winter						
Licence Holders	199	352	635	137	267	1,576
Hired Men or Helpers	63	88	505	135	149	931
TOTAL	262	440	1,140	272	416	2,507
Annual						
Licence Holders	546	905	650	144	308	2,479
Hired Men or Helpers	155	207	505	186	148	1,181
TOTAL	701	1,112	1,155	330	456	3,660

Note:

Those who fish in more than one area or season or who fish both as hired men and licence holders, are counted only once in the appropriate "TOTAL" column. Where hired men and licence holder duplication occurs, the individual is counted as a licence holder. Therefore, the table does not total horizontally or vertically.

Commercial fishing statistics for the 1986-87 fiscal year were not available in time to be included in this report. They will appear in the annual report for the next fiscal year.

Commercial Fishing Production (Round Weights kg), by Area and Total Value By Species, 1985-1986

	Northern Lakes		Lake Winnipeg		Lake Manitoba		Lake Winnipegosis		Other Lakes[1]		Total Production			Total Value $		
Species	**Summer**	**Winter**	**Summer**	**Winter**	**Summer**	**Winter**	**Summer**	**Winter**	**Summer**	**Winter**	**Summer**	**Winter**	**Total**	**Summer**	**Winter**	**Total**
Whitefish	980,100	120,950	857,450	509,400		34,200	60,750	23,450	105,450	211,250	2,003,750	899,250	2,903,000	1,608,050	1,168,200	2,776,250
Roe[3]	(1,650)								(1,750)		(3,400)		(3,400)	(10,800)		(10,800)
Pickerel	559,400	50,400	2,131,300	220,500		246,150	76,100	10,000	261,400	116,450	3,028,200	643,500	3,671,700	7,387,950	1,894,800	9,282,750
Sauger		150	924,750	508,300		186,600	250	1,800	1,850	1,450	926,850	698,300	1,625,150	1,590,350	1,348,700	2,939,050
Pike	554,850	134,300	189,300	32,800		207,100	95,150	588,150	178,700	321,400	1,018,000	1,283,750	2,301,750	647,850	1,148,850	1,796,700
Tullibee	43,450	26,350	900	150		Tr[2]	Tr[2]	Tr[2]	28,050	8,100	72,400	34,600	107,000	53,100	26,050	79,150
Trout	9,200										9,200		9,200	9,650		9,650
Mullet	3,300	48,950	150	43,200		651,350	327,750	601,000	100	46,100	331,300	1,390,600	1,721,900	51,500	244,200	295,700
Goldeye	5,150	250		100		Tr[2]	11,800	9,000	750	2,700	17,700	12,050	29,750	10,800	8,700	19,500
Perch	600	200	28,600	6,050		113,050	200	9,300	900	3,850	30,300	132,450	162,750	93,500	437,000	530,500
Carp			32,900	13,050	109,850	52,500	2,850	57,600		400	145,600	123,550	269,150	28,950	21,100	50,050
Sturgeon	5,650		Tr[2]								5,650		5,650	53,600		53,600
Bass			5,650	12,950		200					5,650	13,150	18,800	8,400	25,250	33,650
Catfish			3,300	300							3,300	300	3,600	1,550	150	1,700
Crappie			250	150							250	150	400	500	350	850
TOTAL	2,161,700	381,550	4,174,550	1,346,950	109,850	1,491,150	574,850	1,300,300	577,200	711,700	7,598,150	5,231,650	12,829,800	11,545,750	6,323,350	17,869,100

[1] *Includes Buffalo, Cedar, Chitek, Dauphin, Dog, Little Limestone, Pelican, Proulx, Red Deer, St. Martin, Swan, Waterhen, and William Lakes*
[2] *Trace (small amount)*
[3] *Figures for roe are not included in table totals*

NOTE: *Total value includes both initial value and final payment.*
Commercial fishing statistics for the 1986-87 fiscal year were not available in time to be included in this report. They will appear in the annual report for the next fiscal year.

Commercial Fishing Production (Round kg), Total Value and Employment (Licenced Fishermen Plus Hired Men) 1976-77 to 1985-86

	Northern Lakes		Lake Winnipeg		Lake Manitoba		Lake Winnipegosis		Other Lakes		Manitoba Total		Total
Year	Weight(Kg)	$ Value	Weight(Kg)	$ Value	Weight(Kg)	$ Value	Weight(Kg)	$ Value	Weight(Kg)	$ Value	Weight(Kg)	$ Value	Employment
1976-77	3,087,550	2,094,250	4,497,500	5,226,850	1,059,850	849,850	823,650	444,700	1,228,000	888,350	10,696,550	9,504,000	2,953
1977-78	3,418,800	2,395,000	4,764,950	5,175,650	1,726,150	566,850	2,013,900	821,700	1,286,050	828,550	13,209,850	9,787,750	3,170
1978-79	2,915,500	2,629,000	4,949,100	5,765,300	1,535,500	713,350	2,462,000	1,022,050	1,577,650	1,425,900	13,439,750	11,555,600	3,161
1979-80	3,679,500	3,261,500	5,258,100	7,642,850	2,921,450	2,790,950	2,926,000	1,337,750	1,846,400	1,919,450	16,631,450	16,952,500	3,213
1980-81	3,474,300	3,576,200	5,652,800	9,066,800	2,330,400	2,270,950	3,172,650	1,375,200	1,816,100	2,346,750	16,446,250	18,635,900	3,659
1981-82	2,888,150	3,344,350	5,929,100	9,935,800	2,637,850	2,462,900	1,873,250	972,450	1,220,150	1,802,650	14,648,500	18,518,150	3,767
1982-83	2,732,850	2,252,500	5,446,900	6,963,800	3,290,800	1,825,900	2,550,350	1,096,900	1,446,900	1,235,750	15,467,800	13,374,850	3,826
1983-84	2,167,250	2,431,650	5,502,100	8,871,650	2,457,500	2,224,700	1,859,550	1,266,900	1,219,950	1,582,650	13,205,350	16,377,550	3,737
1984-85	2,563,850	3,350,000	5,950,100	9,870,550	1,751,050	2,260,900	1,939,700	1,513,650	1,345,600	1,989,050	13,750,300	18,984,150	3,811
1985-86	2,543,250	2,961,900	5,521,500	10,304,350	1,601,000	1,817,200	1,875,150	1,077,900	1,288,900	1,707,750	12,829,800	17,869,100	3,660

NOTE: Total Value includes both Initial Value and Final Payment.

Forestry

This branch administers the Forest Act and Dutch Elm Disease Act, develops and implements commercial harvesting plans for Manitoba's forests, administers timber-cutting licencing and measurements; conducts tree improvement and forest genetics studies; plans and coordinates silviculture, reforestation and timber management programs; maintains a forest inventory; and develops and implements forest protection programs including Dutch Elm Disease control.

Forest Management

Forest Inventory reports summarizing forest conditions and wood volumes available for annual harvest were completed for three Forest Management Units. They included Forest Management Unit 01 (Winnipeg), 02 (Portage la Prairie) and 07 (Shoal Lake) in the Aspen Parkland Forest Section. These activities completed the forest survey of the Aspen Parkland Forest Section of southwestern Manitoba.

Forest survey crews collected forest measurement data required for the revision of the stand/stock volume tables representing the west half of the Lake Winnipeg East Forest Section.

The "FORIST" system (Forestry Geographic Information System) became operational on August 28, 1986 with the completion of the basic computer program and data input requirements for the 20 township (1900 km^2) training and test area in the Pineland Forest Section. As of March 31, 1987 over 90% (8,229 km^2) of the first Forest Management Unit (FMU 20) had been entered into the system.

Permanent sample plots designed to track forest change over time were being established in representative forest stands across the forest zone of the province. The plots were located in both natural stands and plantations to provide respresentative samples of growth rates in volume being achieved in the province. Permanent plots will be remeasured at five year intervals to establish the growth trends and to permit prediction of volume accumulations in the future.

Forest Management Projects, 1986-87

Activity	Area In Square Kilometres
Aerial Photography	13,470
Forest Cover Mapping	14,910
Air Photo Interpretation	11,970
Forest Surveys	14,410
Area Compilation (FORIST)	8,220
Forest Inventory Reports	34,370
Township Air Photo Mosaics	76,460

Timber Management and Development

The forest product industry strengthened throughout the 1986-87 fiscal year. Lumber prices stayed in the upper range of the previous year, newsprint rose and held at the $570.00 (US) per ton and kraft paper jumped an average $100.00 ($450.00 to $550.00 US) per ton. However, much of this market strengthening did not translate into any significant provincial Crown timber volume increases as most mills utilizing Manitoba wood were already at full operating capacity.

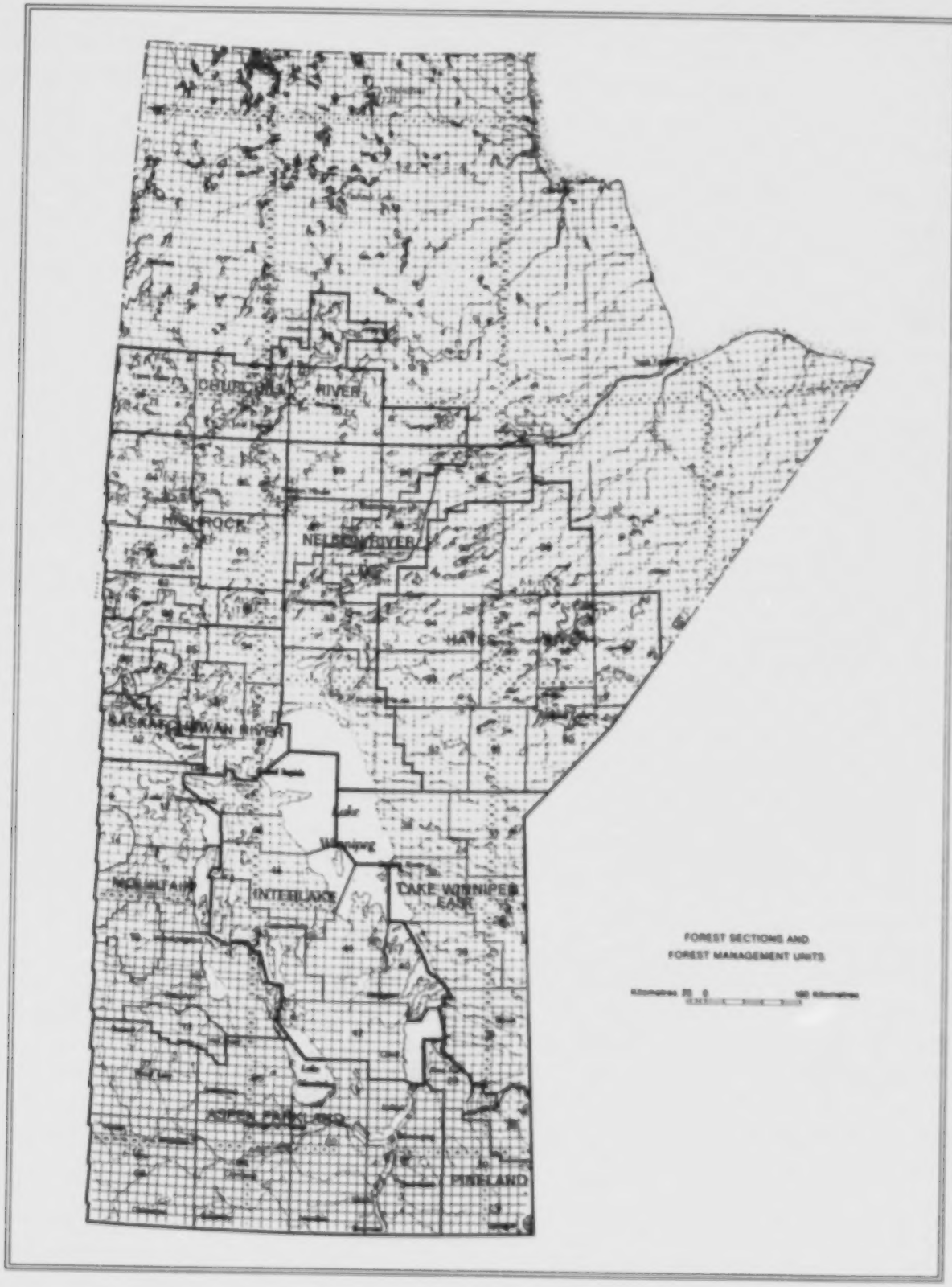
The upturn in the forest products market was attributed to low interest and mortgage rates, the continued weak Canadian dollar compared to the US dollar, world currency shifts favoring Canada and the USA, plus a strike in the British Columbia lumber industry. Offsetting this improving market trend was the countervail duty petition filed by US lumber interests against the increasing volume of Canadian lumber entering their country. The industry and Canada were concerned that the US would introduce legislation and a countervail duty would result on Canadian lumber entering the US. Canada negotiated a "Suspension Agreement" wherein Canada would self-impose a 15% export tax on lumber entering the USA, if the USA would suspend activities relating to countervail. The Canadian export tax on softwood lumber came into effect on January 8, 1987.

The harvest of timber from provincial Crown lands totalled 1,669,132 m^3 for the 1986-87 fiscal year. This comprised 1,485,188 m^3 of softwood and 183,944 m^3 of hardwood. This is 19,765 m^3 less wood than the previous year and represents a decline of 1.17%. The production of lumber, posts and round timber rose, but declines occurred in pulpwood, mine timber, railway ties, poles and fuelwood compared to last year.

The forest revenue declined to $2,965,595.00. This is down $102,601.00 from last year and is attributed to a revenue reduction in the fire suppression cost recovery category. However, increases were posted in all three timber cutting classes and nursery stock sales. This translated into an increase of approximately 10% for the provincial average cubic meter rate of timber dues.

The timber dues rate that was instituted on October 1, 1985 remained in effect throughout the 1986-87 fiscal year. This was due to an increase of less than five cents in the Manitoba Forest Price Index. (To change, there must be a variance of the current dues by at least five cents.)

Timber permits issued this fiscal year totalled 5,961, a decrease of 983 permits from the previous year. This was attributed to a reduction in interest for the cut-your-own firewood and other forest products programs on Crown lands.


CHURCHILL RIVER
NELSON RIVER
HAYES
SASKATCHEWAN RIVER
Winnipeg
INTERLAKE
LAKE WINNIPEG EAST
ASPEN PARKLAND
PINELAND
FOREST SECTIONS AND
FOREST MANAGEMENT UNITS

During the year, Timber Sale Quotas were reviewed and volume adjusted for low utilization levels or cancelled for non-use based on the previous five years. This combined with some quota sale assignments resulted in 205 timber quota sales being in force as of March 31, 1987. This represented a decline of 16 quotas over the previous year and an accumulated 67.5% reduction from the 631 original timber sale quotas first issued in 1965.

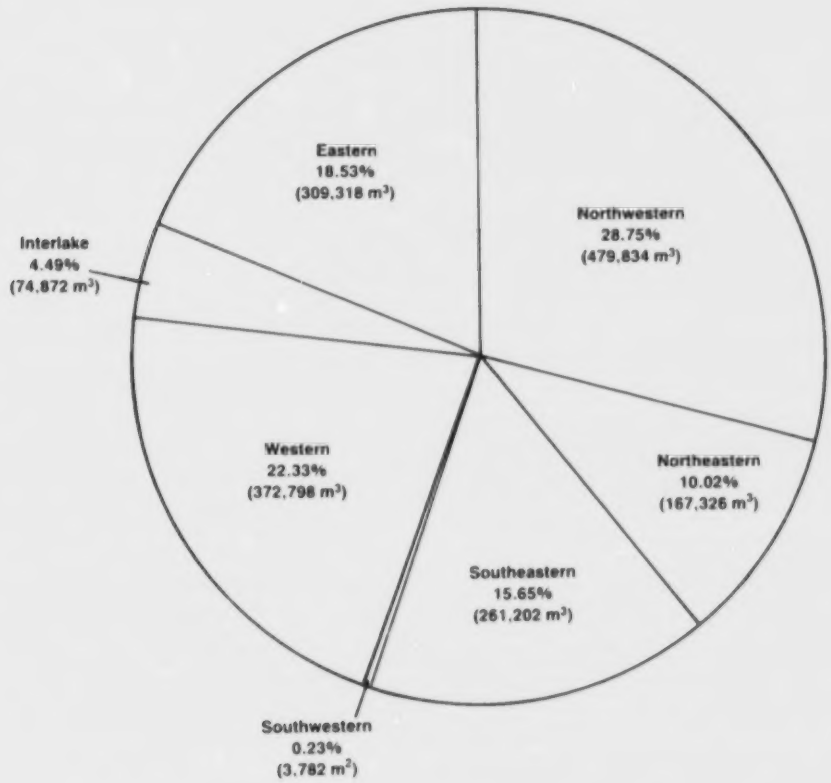
There was no change from the previous fiscal year in the number of timber permit quotas. Thirty-seven remained in place.

A marked increase was noted in the number of requests for information and/or assistance regarding farm woodlots and Christmas tree production. This was indicative of an increase in seedling orders from the provincial nursery for the private woodlot program.

Timber Cut on Crown land, 1986-87

Product	Species	Cubic Metres		Percent
Lumber	Spruce, Pine, Fir Tamarack, Cedar	522,940		
	Poplar, Birch and other hardwoods	75,228	598,168	35.84
		598,168		
Pulpwood	Spruce, Pine, Fir	889,376		
	Poplar	37,709	927,085	55.54
		927,085		
Railway Ties	Pine		1,388	0.08
Line Poles	Cedar, Pine, Tamarack, Spruce		182	0.01
Fence Posts	Cedar, Pine, Tamarack, Poplar, Spruce, Oak		20,127	1.21
Round Timber	Spruce, Pine, Tamarack		23,986	1.44
Mining Timber	Pine, Spruce		157	0.01
Fuelwood	Birch, Poplar, Pine Spruce and other species		98,039	5.87
	TOTAL 1986-87		1,669,132	100.00
	TOTAL 1985-86		1,688,897	

Percentage of Timber Produced Within Departmental Regions 1986-87



Total Timber Cut: 1,669,132 m³

Record of Timber Scaled or Manufactured, 1986-87

	LUMBER — CUBIC METRES								PULPWOOD — CUBIC METRES				PIECE PRODUCTS—CUBIC METRES				FUELWOOD — CUBIC METRES						CUBIC METRES	
																	GREEN							
	Metres Mine Timber	Christmas Trees Pieces	Spruce	Balsam	Jack Pine	Other Soft Woods	Poplar	Other Hard Woods	Spruce	Balsam	Jack Pine	Poplar	Railway Ties	C W Poles	P J Poles	Posts	Spruce	Jack Pine	Poplar	Other Hard Woods	Dry	Slabs and Tops	Round Timber	Totals
SUMMARY BY REGIONS																								
Northeastern		30	43 709		28 763				51 331		33 075					9	1 422	3 203	1 032	526	4 224		32	167 326
Northwestern	157	37	135 491		93 820		28	2	144 954		97 297		574		1	186	240	300	1 803	1 102	3 802		77	479 834
Southeastern		6 737	322	12	33 543	1 283	40 242	1 841	53 977	2 851	52 480	36 806	798			2 220	609	1 659	14 892	7 304	5 058	2 390	2 915	261 202
Southwestern		50					40									62		130	2 705	412	285		148	3 782
Eastern		9 867	4 135	2	7 716	47	2 766	1 638	224 438	494	53 843	684			22	254	379	804	4 807	1 988	4 662	160	479	309 318
Interlake		260	8 835	28	3 497	11	1 965		34 152	207	11 956	94				1 680	65	1 225	3 018	1 252	4 623	98	2 166	74 872
Western		1 548	131 926	280	29 379	141	24 344	2 382	98 580	355	29 406	125	16		159	15 716	963	421	7 370	7 185	4 921		18 169	372 798
TOTALS	157	18 549	324 418	322	196 718	1 482	69 385	5 843	607 412	3 907	278 057	37 709	1 388		182	20 127	3 678	7 742	35 627	19 769	28 575	2 648	23 986	1 669 132
SUMMARY BY STATUS OF LAND																								
Prov Forests																								
Agassiz		735			953	51	2 289		5 988		428	17 915	14			207	28	371	5 054	1 742	1 832	495	58	37 425
Belair			(50 Cr)						144		1 218					34		67	317	62	182		16	1 990
Brightstone						17			62							1		12	390	115	337			934
Cat Hills					1 575		75		42		424							25	75		12			2 229
Cormorant			118													1	13	3	58	296	925		20	1 434
Duck Mountain		897	79 434	189	23 414		12 388	1 245	49 430		11 209		4		160	258	12	247	2 343	4 178	1 272		16 380	202 163
N W Angle		1 765			28	200	20 648	585	10 590	500	237	843			583			22	232	947	87	37	191	35 730
Porcupine			37 338	90	5 307		544	340	44 374	355	17 847					14 613	39	7	745	1 105	3 708		897	127 309
Sandilands		1 910	240		24 464	275	4 410	1 216	26 754	801	26 088	15 891	467			961	25	872	7 135	3 468	1 270	1 653	1 475	117 445
Spruce Woods																3		130	335		17		72	557
Turtle Mtn																			40	72	55			187
Whiteshell		17			5 894	111	5 442	2	7 668		23 752	700	317			45	575	172	935	261	486	150	78	46 588
TOTAL PROV FORESTS		5 324	117 080	279	61 635	654	45 796	3 388	145 052	1 656	81 183	35 349	802		160	16 706	692	1 928	17 659	12 246	10 183	2 335	19 187	573 970
OTHER PROV LANDS	157	13 225	207 338	43	135 083	828	23 589	2 455	462 360	2 251	196 874	2 360	586		22	3 421	2 986	5 814	17 968	7 523	18 392	313	4 799	1 095 162
TOTALS	157	18 549	324 418	322	196 718	1 482	69 385	5 843	607 412	3 907	278 057	37 709	1 388		182	20 127	3 678	7 742	35 627	19 769	28 575	2 648	23 986	1 669 132
SUMMARY BY METHOD OF DISPOSAL																								
Permits		6 847	2 886	42	2 551	786	8 825	273	18 177	3 275	12 643	30 208	16		23	19 624	2 962	6 613	33 280	14 181	28 501	2 458	7 587	192 911
Sales	157	11 861	150 968	280	76 149	696	57 852	3 939	229 027	632	85 314	7 501	1 372		159	503	716	1 041	2 347	5 107	83	190	16 234	640 247
Berths			170 341		118 018		2 708	1 631	362 057		180 100							42		481	11		165	835 554
Seizures		41	223						151									46						420
1986-87 TOTALS	157	18 549	324 418	322	196 718	1 482	69 385	5 843	607 412	3 907	278 057	37 709	1 388		182	20 127	3 678	7 742	35 627	19 769	28 575	2 648	23 986	1 669 132
					598 168						927 085								98 039					
1985-86 TOTALS	2 493	17 895	220 849	571	164 697	2 693	81 259	4 757	709 510	2 478	317 013	36 360	5 043	7	420	17 075	2 906	8 699	34 226	23 389	39 218	2 123	13 111	1 680 897
					474 826						1 065 361								110 561					

Annual Forest Production by Forest Product 1982-83 to 1986-87

Year	Pulpwood		Lumber		Fuelwood		Other		Total	
	Volume (m^3)	%	Volume (m^3)	%	Volume (m^3)	%	Volume (m^3)	%	Volume (m^3)	%
1982-83	787,879	53.3	518,062	35.1	111,555	7.5	60,596	4.1	1,478,092	100%
1983-84	837,756	55.8	509,476	34.0	102,474	6.8	50,626	3.4	1,500,332	100%
1984-85	1,201,970	71.9	330,228	19.7	103,593	6.2	37,240	2.2	1,673,031	100%
1985-86	1,065,361	63.1	474,826	28.1	110,561	6.5	38,149	2.3	1,688,897	100%
1986-87	927,085	55.5	598,168	35.8	98,039	5.9	45,840	2.8	1,669,132	100%

Permits, Licences and Quotas on Crown Lands (Including Provincial Forests), 1985-86 and 1986-87

		1985-86	1986-87
1.	Timber Dealers and Sawmill Licences		
	Timber Dealers	53	65
	Sawmill Licences	109	112
2.	Permits and Licences Covering Timber Cutting Rights		
	PERMITS	6,944	5,961
	TIMBER SALE AGREEMENTS		
	Awarded	194	41
	Previously Awarded	58	162
	TOTAL	252	203
3.	Timber Seizures Recorded	14	12
4.	Timber Allocations in Force at March 31		
	Timber Sales	221	205
	Timber Permits	36	37
	TOTAL	257	242
5.	Forestry Revenue (Crown Charges)	$3,068,196.98	$2,965,595.75

Permits and Leases in Provincial Forests, 1985-86 and 1986-87

		1985-86	1986-87
1.	General permits and leases		
	Sawmill sites	2	3
	Trappers cabins	43	45
	Hunting and fishing cabins	3	3
	Other lodges, cabins, residences	4	2
	Grazing fences	—	—
	Maintain roads and/or spurlines	2	3
	Youth groups (camping and sports)	5	5
	Land use for municipal purposes	8	6
	Land use for government purposes	4	5
	Miscellaneous	26	30
	TOTAL	97	102
2.	Hay permits		
	Number of permits	18	16
	Tonnes of hay	234.65	236.86
3.	Grazing permits		
	Number of permits	3	3
	Head of livestock	65	45

Revenue from the Sale of Crown Timber

Year	Total Harvest (in cubic metres)	Revenue[1]
1972-73	1,571,544	$ 811,851.80
1973-74	1,588,759	843,081.37
1974-75	1,932,383	924,586.53
1975-76	1,851,552	1,739,308.27
1976-77	1,519,998	1,345,601.02
1977-78	1,646,562	1,176,078.00
1978-79	1,714,300	1,292,180.63
1979-80	1,940,082	1,624,290.86
1980-81	2,320,031	1,908,776.72
1981-82	1,782,078	1,792,589.82
1982-83	1,478,092	1,383,734.70
1983-84	1,500,332	1,964,510.80
1984-85	1,673,031	2,302,339.73
1985-86	1,688,897	2,473,081.25
1986-87	1,669,132	2,682,289.37

(1)Dues in respect of Crown Timber Harvested

Silviculture

In 1986-87 the department and the forest industry maintained their commitment to silvicultural programs. Approximately 13,170 hectares received some form of silvicultural treatment, a slight increase over 1985-86. Of this, 47% of the programs were carried out by the forest industry and 53% by the province.

Approximately 10 million bareroot and containerized seedlings were planted in the spring and fall of 1986, some six million of which were planted by the Forestry Branch. As in past years, planting contracts have proven to be successful and their use will probably increase in the future. Some 60% of the seedlings planted by Forestry Branch were planted under contract with private operators. Most seedlings were produced at the Pineland and Clearwater nurseries with the exception of approximately 1.5 million seedlings which were grown under contract in a privately operated greenhouse.

Mechanical site preparation for hand planting increased by 31% over 1985-86. This increase was due to an expected increase in the number of seedlings available for the 1987 planting program.

Silvicultural surveys were conducted on approximately 28,000 hectares of cut-over and recently burned forested lands. This was a substantial increase over 1985-86, a result of not only the need to monitor new and existing plantations, but the need to identify lands that required silvicultural treatment to return them to forest production.

Pineland Provincial Forest Nursery

Pineland Provincial Forest Nursery shipped approximately 5.86 million seedlings in 1986-87. To provide this number of seedlings, the 14 greenhouses were fully utilized on a two crop system.

The bareroot lifting was reduced for 1985 due to losses in the fields over the last several years. A major effort was made during the current year to improve bareroot production. This included such methods as deep tilling the beds that have become too hard for proper seedling production, addition of peat moss to lower the pH of the fields, and transplanting some of the existing stock to improve the quality of the seedlings at the time of shipping.

Other major activities at the nursery included construction of the cold storage building designed for storing approximately ten million seedlings. It was scheduled for completion in the fall of 1987.

An additional six reefer vans were purchased, increasing the fleet to nine. They are used not only to transfer seedlings to the regions, but also for on-site storage at the planting location.

The nursery processed 922 hectolitres of cones in 1986 and extracted approximately 494 kilograms of seed.

Clearwater Provincial Forest Nursery

Clearwater Provincial Forest Nursery shipped 3.05 million containerized seedlings to Manfor Ltd., and the northern and western regions. These crops were

produced using the 16 greenhouses that were ready for operation. During the year the last headerhouse and the final four greenhouses were completed with 20 operational greenhouses producing a two-crop capacity of approximately six million seedlings.

Two operational research trials were initiated during the fiscal year. This included the growing of seedlings under an extended greenhouse culture and in new Can Am multipot containers. If successful, this will give the nursery some flexibility in both the timing of crops and in the type of containers available.

Tree Improvement and Forest Genetics

The major emphasis of the tree improvement program was to locate superior stands of black spruce in the southern seed zone and select cones and scion material from within these stands. In total, 65 stands were identified and material was collected from 442 trees. This material was required to establish a black spruce seed orchard for the southern part of the province.

The tree improvement facility located at the Pineland Provincial Forest Nursery at Hadashville was completed and three special crops were being grown in the facility. This included seedlings for seed orchards and a large stock research program being carried out under the Canada-Manitoba Forest Renewal Agreement. This facility provided the opportunity to produce superior seedling stock for the seed orchard and research programs.

The joint jack pine tree improvement program under the Canada-Manitoba Forest Renewal Agreement was accelerated with two seed orchards in the northern region being site prepared, planted, and fenced in the summer of 1986. In addition, cones were selected from superior stands of jack pine in the Interlake Region and sites were identified for seed orchards within the region.

1986-87 Forest Renewal Activities

	Province of Manitoba Regional Program	Abitibi Price	Manfor
Renewal			
Trees Planted	6,074,500	1,309,000	2,827,000
Hectares Planted	2,533	582	1,031
Hectolitres of Cones Collected	687	29	206
Hectares Scarified for Natural Regeneration	433	2	662
Hectares Site Prepared	3,506	1,002	2,024
Total Area Regenerated	6,472	1,586	3,717
Stand Tending			
Hectares Mechanically Thinned or Released	Nil	148	150
Hectares Herbicided	154	520	51
Hectares Treated for Insect or Disease Infestation (not including jack pine budworm)	359	Nil	Nil

Forest Protection and Dutch Elm Disease

Jack Pine Budworm

There was still a noticeable jack pine budworm infestation in Manitoba in 1986. A major decrease in jack pine budworm occurred in the Northern and Interlake regions while localized infestations persisted in the Western and Southeastern regions. Widespread severe defoliation continued for a second year east of Lake Winnipeg and into Ontario.

Based on the 1985 egg mass survey, a spray program for 34,000 hectares was initiated. Low pre-spray larval populations resulted in cancellation of 7,500 hectares of forest spraying at Sipiwesk, William Lake, Moose Lake, Wanless and Cowan.

Pheromone traps were placed at 12 locations throughout the province. Male moth captures declined drastically from 1985 at all but two locations.

Egg mass surveys to predict 1987 defoliation were carried out in all spray block locations. Results from all areas indicated no or light defoliation for next year.

Spruce Budworm

Infestations in the Whiteshell Provincial Park and the southern Interlake Region continued for the 11th consecutive year. The infestation east of Lake Winnipeg (now in its fifth year) persisted at severe levels. Considerable balsam fir mortality occurred in the infestation areas.

Spray operations with *Bacillus thuringiensis* were carried out in two high use recreation areas. Unfortunately, the spray efficiency was less than desirable at both locations.

The results of the egg mass survey, however, indicated a decline in the Interlake infestation. All sample locations predicted light defoliation for 1987. Results from the Whiteshell and Lake Winnipeg East samples predicted moderate and severe defoliation again in 1987.

Dwarf Mistletoe

In Manitoba, dwarf mistletoe has traditionally reduced both the quantity and the quality of merchantable timber. Over the past three years, surveys, research and sanitation activities related to this disease were carried out under the Canada-Manitoba Forest Renewal Agreement. In 1986 operational surveys were carried out in the Interlake, Western and Eastern regions to locate areas for harvesting and sanitation.

Two research projects funded by the Agreement were undertaken by the University of Manitoba Botany Department.

Sanitation treatments carried out for dwarf mistletoe consisted of post-logging treatments (removal of residual infections prior to reforestation), fuelwood production in heavily diseased unmerchantable stands, creation of disease free buffer zones (15 metres wide) to protect uninfected juvenile stands, and thinning and pruning of juvenile stands to reduce the disease to tolerable levels.

Armillaria Root Rot

Armillaria root rot continued to be a concern in red pine plantations at a few locations in eastern and southeastern Manitoba. The disease was found in plantations ranging in age from five to 50 years. In the younger plantations (five to 15 years) the decaying roots and stumps from the previous generations of trees (jack pine in all cases) appeared to be the food base facilitating the build up of the fungus in the soil. The older plantations (35 to 50 years) have experienced the removal of suppressed red pine or residual jack pine in recent years. This was also believed to have supplied the food base for the fungus as the disease occurred in the immediate vicinity of the removed trees. Infected trees suffered substantial growth reduction and mortality. With the considerable thinning that has recently been carried out in red pine plantations, the potential for outbreaks of Armillaria root rot has increased.

White Pine Weevil

White Pine Weevil has become a chronic problem in several white spruce plantations located in the Interlake Region of Manitoba affecting some 1,100 hectares. Although sanitation pruning was carried out on 185 hectares in 1984 and 1985, the infestation entered its fifth consecutive year expanding into surrounding areas. The entire plantation area was surveyed this past summer to determine weevil distribution. Sanitation pruning was carried out on 200 hectares based on survey results.

The removal of competing poplar within the white spruce rows over the past five years may have contributed to the increase in weevil numbers. Silvicultural prescriptions may require modification in white spruce plantations as the weevil is a sun-loving insect preferring open growing trees.

Dutch Elm Disease

During the 1986 summer surveillance season, approximately 13,000 elms were examined in and around urban and rural municipalities. Of these, 2,948 were confirmed to have Dutch Elm Disease (DED) and 9,879 were classified as hazards, many of these dead as a result of DED. Due to the large number of elms infected in wild stands throughout southern Manitoba, particularly in eastern and central regions, control efforts were

once again concentrated on elms in and around cost-sharing communities.

The number of municipalities with DED increased from 72 to 77 during 1986-87. Communities involved included major urban centres like Winnipeg, Brandon, Portage la Prairie, Carman and Selkirk as well as major recreational areas such as the Northwest Angle Provincial Forest, Spruce Woods and Whiteshell provincial parks and Riding Mountain National Park. DED was observed for the first time this year in the Rural Municipalities of Ellice, Archie, Miniota, Wallace, Woodward and Edward. Increases in the number of diseased and dead trees were observed around Bissett, Nopiming Provincial Park, along Netley Creek north of Teulon and along the northeast shoreline of Lake Manitoba.

Although DED continued to increase in the wild stands, diseased elms in urban centres with control programs were comparably few. Less than 1% of Winnipeg's elms were diseased, and in Brandon, less than 2% of the elms were infected. Most of these trees were found in wild stands alongs the riverbanks where control measures have proven less effective. The City of Winnipeg reported that, of 3,218 samples taken this year, 2,219 were confirmed to have DED. An additional 5,464 were marked as hazards for a variety of reasons.

The disease continued to increase along most of southern Manitoba's rivers. Large increases in disease have occurred on the Red and Assiniboine rivers around Winnipeg, along the Assiniboine from Portage la Prairie to Brandon and west of Brandon as far as the St-Lazare area. The Whitemud River around Westbourne showed a considerable increase in the disease, as well as the east escarpment of Riding Mountain National Park. The smaller river and creek systems in south central Manitoba also experienced more pockets of infection, also endangering farm shelterbelts in the areas around Winkler, Altona, Morden and Carman. The Souris River southwest of Brandon was surveyed by air and reported to be extensively infected upstream in the United States and into Saskatchewan.

The community of Minnedosa which had one diseased tree in 1979 experienced another tree with DED this year. Neepawa which had three diseased trees in 1984 remained disease free again this year. The communities of Carman, Deloraine, Stonewall, Gimli, Morris and Altona also showed favourable results from sanitation practices such as pruning and basal spraying. Other communities, however, such as Winkler, Morden, Ste. Anne and Souris experienced a considerable increase in DED this year.

The first diseased tree in rural Manitoba this year was observed in St. Jean on May 28 and in the Winnipeg area about June 14. Once again, because of generally cool spring weather conditions and substantial infestations of cankerworms, external symptoms were delayed and general sampling of diseased trees did not get started until the end of June. Most sampling was done in July and the first week of August.

From April 1 to October 31, 1986, the Provincial Dutch Elm Disease sanitation crew removed 3,292 elm trees. In addition, approximately 2,200 decadent elms were removed in Beaudry Provincial Park west of Winnipeg and the Brandon buffer zone.

Canada-Manitoba Forest Renewal Agreement

In 1984, the governments of Manitoba and Canada signed a five year, $27 million forestry agreement aimed specifically at forest renewal, intensive forest management, applied research and technology transfer, and public information. These programs were designed to address the broad objectives of security and expansion of Manitoba's timber supply.

Forest Renewal

Under the portion of the Canada-Manitoba Forest Renewal Agreement funded directly by Canada, Abitibi-Price continued their surveys (3,395 hectares), site preparation and seeding initiatives, planting approximately 712,400 seedlings. Manfor surveyed 2,261 hectares, collected 158 hectolitres of cones and planted approximately 825,000 seedlings. Under provincial funding, a cold storage building at the Pineland Provincial Nursery was completed. Reforestation and scarification efforts continued and cones were collected.

Intensive Forest Management

Dwarf Mistletoe control activities continued. Over 154 hectares of infected trees were treated, salvaging 30 m^3 of fuelwood. Aerial and ground surveys were conducted on 4500 square kilometres.

Abitibi Price thinned and applied herbicides to 148 hectares, while Manfor also continued its thinning projects.

Applied Research, Technology Transfer, Opportunity Identification and Nursery Development

Applied Research — Research on the environmental impacts of aerial spraying on vegetation and aquatic ecosystems was undertaken. Following the development of a procedures manual, the results were relayed to Abitibi Price and a stand management workshop was conducted for 50 participants.

Technology Transfer — Several studies on forest economics were completed. They included Economics of Intensive Forest Management, Timber Valuation/Damage Appraisal and Industrial Structure.

Monitoring of insect and disease problems in plot areas continued. Regeneration efforts, site classification and jack pine seed orchard programs also progressed during the year.

Under the national communications strategy, four television commercials aired and a series of print ads ran over a period of two months. This was part of an effort to raise public awareness of forestry across the country.

Nursery Development — Approximately 2.3 million bareroot seedlings were lifted, packed and shipped, while 40 hectares of bareroot seedlings were mechanically thinned and weeded at the Pineland Nursery. Growth monitoring was conducted for the first time this year and growth curves established. Three million seedlings were shipped from the Clearwater Provincial Nursery. A central storage area and a shipping/receiving area were constructed in the seed line building.

Public Information, Evaluation and Administration

A new brochure on the Canada-Manitoba Forest Renewal Agreement was developed for printing next fiscal year. Brochures on insect and disease problems were reprinted to meet continued public demand for information on those subjects. New video equipment was obtained including an editor to develop the inhouse capability for production.

Jobs Fund Sectoral Project in Forestry

The sectoral project in Forestry under the Jobs Fund was an extension of the Canada-Manitoba Forest Renewal Agreement and has been managed in a similar manner.

The four programs — forest renewal, forest management, nursery development and public information continued to support projects under the Agreement. As part of forest renewal, 3.4 million trees were planted, 270 hectolitres of cones were collected, and 1538 hectares of land were scarified and site prepared. Other projects resulted in 27,134 hectares sprayed for jack pine budworm and 28 kilometres of the Kinwow Bay Road was contructed. The GIS FORIST system was further developed and 820 air photo mosaics were completed. Funding under the Sectoral Project also assisted in the operation of both Pineland and Clearwater nurseries.

Summary by Program 1986-87

	Canada-Manitoba					
	100% Manitoba		Cost Shared		100% Canada	
	Allotted	Expended	Allotted	Expended	Allotted	Expended
PROGRAM "A" Forest Renewal	$1724.5	1600.5	—	—	365.2	349.7
PROGRAM "B" Intensive Forest Management	280.0	259.5	—	—	733.9	696.9
PROGRAM "C" Applied, Tech. Transfer, Opport. Ident & Nursery Develop.	1056.0	1024.6	710.0	650.9	498.7	492.7
PROGRAM "D" Public Information, Evaluation and Administration	.60	5.3	—	—	230.7	234.7
AGREEMENT TOTALS (1986-87)	$3066.5	2889.7	710.0	650.9	1828.5	1774.0

Lands

This branch administers Crown land in Manitoba under The Crown Lands Act; maintains a Crown lands register; negotiates outstanding treaty claims and land settlements with Indian bands and the federal Department of Indian and Northern Affairs; administers the allocation of wild rice licences on Crown land under The Wild Rice Act; and maintains the Garrison Focus Office.

Land Administration

During 1986-87 this section continued to circulate requests for the use of Crown land and administer the various contracts concerning land uses.

Crown Land Sales and Permanent Dispositions

Orders-in-Council approved	78
Parcels of land approved for sale	649
Agricultural transfers	45
Residential transfers	58
Recreational transfers	45
Commercial/Other transfers	21
Long-term agreements paid out and transferred	34
Conveyance of minerals	46

Leases, Permits and Licences

Leases and Permits in effect	3497
Assignments processed	216
New applications processed	593
Cancellations/Surrenders processed	210

Revenue — Land Administration

Sales:	
Agricultural	$313,792.89
Primary Residences	50,043.49
Recreational	140,149.65
Commercial/Other	40,604.75
Subtotal	$544,590.78
Lease/Permit rentals	394,724.96
TOTAL	$939,317.72

Crown Land Registry

The Crown Land Registry continued to provide a record of original dispositions of lands in Manitoba, and a record of all transactions related to Crown lands currently administered by the province. Information was provided daily for legal firms, the Land Titles Office, other departments and levels of government, historical societies and the general public.

Wild Rice

The 1986 wild rice crop exceeded the ten year average (295,000 kgs) by reaching 387,800 kgs. All areas of the province experienced a good crop, although isolated instances of crop failures did occur.

Wild rice development in northern Manitoba continued, with licences increasing from 12 in 1984 to 265 in 1986. Organizations continued to be formed to support individual producers with experience, information and funding support. This northern development was supported by the department through informational work shops, lake assessment, test seeding and on site extension with licence holders.

The test seeding program continued in 1986, intended to assist northern communities in generating an interest in producing wild rice. Several potential lakes were selected, test seeded and checked for survival. During 1986 a total of 34 sites were test seeded in the Northeastern Region.

The 1986 Whiteshell wild rice harvest program was planned and implemented with the support of an advisory committee, composed of native representation from the Southeast Resource Development Council, Interlake Tribal Council, Fort Alexander Band and the R.C.M.P. The program involved the designation of zones, with varying dates for hand harvesting and mechanical harvesters.

Wild Rice Harvest

	1984	1985	1986
Total Harvest (pounds)	620,655	608,247	855,000
Lakeside Price (pounds)	$1.80	$1.05	$0.90
Licences	341	446	424
Harvest Permits	34	48	26
Buyer's Permits	12	9	5

Indian Land Claims

In accordance with established statutes, agreeements and policy, the Indian Land Claims Section was responsible for the research, negotiation and implementation of land claims settlements in Manitoba.

Twenty-three Indian Bands have validated treaty land entitlement claims stemming from the original signing of the treaties, while another five were under review by the federal Office of Native Claims. In addition, a comprehensive agreement on outstanding treaty land entitlement was pending.

Pursuant to negotiated conditions, Orders-in-Council were passed effecting the transfer of lands to Canada for the use and benefit of the Gods River Band (fulfilling a Band requested land exchange), to the Waterhen Band as compensation for public purpose taking, and to the Little Grand Rapids Band fulfilling a Band requested land exchange.

A survey was completed for the transfer of provincial Crown land at Hughes Lake to Canada for the use and benefit of the Mathias Colomb Band.

Negotiations were also in progress with the Barren Lands Band for treaty entitlement at Brochet, the Nelson House Band for treaty entitlement at Nelson House, the Shamattawa Band for treaty entitlement in northeastern Manitoba, the Wasagamack Band for treaty entitlement at Wasagamack, the York Factory Band for treaty entitlement in northeastern Manitoba, the Dakota Tipi Band for land purchase for reserve at Portage La Prairie and the Cross Lake, Nelson House, Norway House, Split Lake and York Factory Bands for compensation lands under the terms of the Northern Flood Agreement.

Indian Land Claims-Summary

Band	Acreage	P.C. Order	O/C	Surveyed	Under Negotiation
The Pas	377.42	X	X		
Chemawawin	11,057.18		X		
Gods River	344.18		X		
Little Grand Rapids	643.6		X		
War Lake	204.86		X		
Waterhen	263.57		X		
York Factory	2,390		X		
Mathias Colomb	3,765			X	
Barren Lands	5.8				X
Cross Lake	31,422				X
Dakota Tipi	57				X
Nelson House	13,732.28				X
Norway House	12,626				X
Shamattawa	8,100				X
Split Lake	6,570				X
Wasagamack	6				X
York Factory	12,976				X

Special Projects and Appraisals

In 1986-87 as a result of negotiations with municipalities concerning the capital upgrading required before the municipality would assume responsibility for providing services to existing Crown subdivisions, three further recreational/residential subdivisions were upgraded to municipal standards, and plans registered in the Land Title Offices. This was an ongoing project whereby provincial liability for provision of services is reduced and the lots can be made available for sale to the current lotholder. A total of 113 lots were made available for sale for a total sale value of approximately $989,000.

Approximately 100 appraisals involving agricultural Crown land, Local Government District lands and a variety of residential/recreational/ commercial lots were completed throughout the year.

Negotiations continued involving the exchange of Local Government District lands. Approximately 20 parcels were returned directly to the Local Government Districts and 15 parcels were sold to agricultural lessees at the request of the Local Government District.

Regional Land Management

Regional land managers continued to operate in the seven Natural Resource regions of the province. As well as providing a local focus for the administration of Crown lands, they continued to take a lead role in chairing local inter-disciplinary land use planning committees and participating in Planning District and municipal land use planning. With the assistance of local Natural Reosurce Officers, the Land Managers counselled users of Crown land and ensured compliance with the terms of the user contract and The Crown Lands Act.

Garrison Focus Office

This office continued to co-ordinate Manitoba's efforts to ensure that construction of the Garrison Diversion Unit in North Dakota proceeds only in such a manner as will ensure that Manitoba's waters are protected from the introduction of biota from the Missouri River system.

The Garrison Focus Office was established in February 1982 as part of an increase in Manitoba's active opposition to the Garrison Diversion Unit as then authorized. Close liaison with Canadian Embassy staff and the employment of a firm of lawyers specializing in environmental issues in Washington, D.C. ensured that Manitoba's concerns were raised with key members of the U.S. House of Representatives, the U.S. Congress and Administration.

The passing by the U.S. Congress in the spring of 1986 of the Garrison Diversion Unit Reformulation Act of 1986 marked a significant alteration to Garrison Diversion plans. Garrison was limited to the irrigation of land draining to the Missouri Basin and to the supply of water for municipal, rural and industrial purposes. The new Act required the proper treatment of all waters transferred from the Missouri Basin to the Hudson Bay Basin to ensure the removal of all biota that may affect Manitoba's fisheries resource.

The Garrison Focus Office continued to monitor the project in order to ensure that Manitoba waters were protected. Concerns related to environmental reviews and impact statements prepared for the revised project have been brought to the attention of the U.S. Bureau of Reclamation and members of the U.S. Congress. Many technical aspects of the project remain of concern to Manitoba and continue to be closely monitored.

Informational material continued to be distributed to students and newspaper articles from American and Canadian publications were distributed to Canadian and American citizens who have been involved in opposing the original project.

The 1986 legislation amended the planned project in a manner that removes many of Manitoba's major concerns, however, certain technical aspects must be resolved in a manner that will ensure permanent protection of Manitoba's waters.

Parks

This branch administers a parks system that provides for the conservation and management of fauna and flora, and the preservation of ecological, cultural, historical and other resources therein; develops facilities and services to meet the recreational needs of the public, and enables Manitobans and visitors to Manitoba to enjoy outdoor recreation; plans and operates park visitor and special user programs; and manages recreational businesses in parks.

Planning

Systems and Management Planning

Public meetings were held in February and April 1986 to review the **Hecla and Grindstone Draft Management Plan**. A summary of public input and recommendations regarding plan approval document was forwarded to the Minister in August. The section initiated the preparation of guidelines for the cultural heritage zone on Hecla Island and drafted an agreement between Ducks Unlimited (Canada) and Manitoba respecting a major expansion of the island's managed marshlands. A Special Features Inventory for Hecla was compiled and a draft report prepared.

Interim Management Guidelines were completed for Grand Beach Provincial Park and Clearwater Provincial Park.

The Parks Branch completed several projects relating to the Canadian Heritage Rivers System. The Bloodvein River in Atikaki Provincial Wilderness Park was designated as Manitoba's first Canadian Heritage River in January 1987. A background study of the Seal River was completed and the nomination document was prepared. In addition, the CHRS Board approved the funding of a background study of the historic Hayes River, to be conducted during the summer of 1987.

A variety of projects were undertaken in Atikaki Provincial Wilderness Park, including a development plan for white-water rafting operations on the Pigeon River, a biophysical inventory, and an assessment of major canoe routes in the park.

Resource Management

The Parks Branch co-operated with several agencies in studies related to caribou in and around Atikaki Provincial Wilderness Park, elk in Spruce Woods Provincial Heritage Park and moose in Turtle Mountain Provincial Park.

The 5-year Forest Management Plan, prepared as a result of the Whiteshell Master Plan, was finalized and approved by the department.

Seed was collected from remnant prairies for tall grass prairie restoration at Beaudry Provincial Park. Planting of plots was scheduled for the spring of 1987. Progress was made on the development of a mechanical harvester for future seed collection.

Work continued on the preparation of detailed plans for historic building reconstruction at St. Norbert Provincial Heritage Park.

Designs and Projects

Plans were prepared for upgrading and improvements at numerous sites throughout the park system. Major new facilities included the equestrian cross-country courses at Birds Hill Provincial Park and the viewing tower (pumphouse) and landscaping associated with the parking lot at Gull Harbour. Plans were made to reorganize the various trail systems in Spruce Woods and to establish additional equestrian trails in this park.

Program Management

Capital Projects

In the Northeastern Region, the major effort in Paint Lake Provincial Recreation Park was a continuation of the redevelopment of the group-use area and sports field along with rehabilitation and upgrading of campsites. Smaller expenditures were required to repair the water system and treatment plants, to improve the fishing access trail and to establish self-registered camping at Troy Lake, with docks and access being developed at Ospwagan, Mid and Liz Lakes. General regional projects included stockpiling gravel, equipment repair and replacement, repairs to boat-launching ramps and docks, landscaping and silviculture at selected sites, and sanitary landfill maintenance.

The primary projects in the Northwestern Region included rebuilding the main dock at Bakers Narrows Provincial Recreation Park, upgrading and reorganizing the boat-launching ramp at Gyles Park Camping and Picnic Area in Grass River Provincial Park and completion of the water supply system to the trailer dump station, office and standpipes in the bays at Wekusko Falls Camping and Picnic Area. General projects throughout the region included equipment replacement, gravel stock piling, repairs to boat-launching ramps and docks, and sanitary landfill maintenance.

The Western Region projects in the Duck Mountain Provincial Park included the upgrading of two septic fields, silviculture improvement at Childs and Blue Lakes and the completion of the parking area at East Blue Lake. A new well was developed for the Steeprock Lake Wayside Park campground, while replacement of pressure tanks, upgrading of the sewage lift station and replacement of sewer pipes were continued at

Cost/Revenue Performance by Service[1]

Item	Number	Cost[4]	Revenue ($)	Revenue/Cost
Golf Courses[2]	2	538,291	438,249	81%
Campgrounds	99[3]	2,337,242	1,408,615	50%
Cottages	569.6	1,449,159		177%
Service Fees			594,552	n/a
Rental			1,823,507	n/a
Development Fees			154,261	
Entrance Gates	14	203,922	597,278	293%
Vacation Cabins	34	82,476	91,537	87%
Commercial Concessions, Games Areas and Miscellaneous	150	n/a	276,145	n/a
Non-revenue Areas		5,922,757	n/a	n/a
Total		11,822,847	5,362,244	49%

[1]Based on maintenance costs only.
[2]Increases were approved for golf course fees.
[3]Camping fees collected at 70 campgrounds.
[4]Based on a 1% cost reduction.

Cost/Revenue Performance by Park

Major Parks	Actual Cost 1986-87 ($000's)	Actual Revenue 1986-87 (All Sources) ($000's)	Revenue/Cost Percentage
Asessippi Provincial Park	214.6	33.0	15%
Beaudry Provincial park	40.7	39.7	97%
Birds Hill Provincial Park	1,265.0	341.9	27%
Clearwater Lake Provincial Park	330.3	92.5	28%
Duck Mountain Provincial Park[1]	321.3	121.6	38%
Grand Beach Provincial Park	781.5	293.0	37%
Grass River Provincial Park[2]	73.7	24.2	33%
Hecla Provincial Park	953.6	341.9	36%
Nopiming Provincial Park[3]	281.6	109.3	39%
Spruce Woods Provincial Park	638.1	92.1	14%
Turtle Mountain Provincial Park	395.1	34.1	9%
Whiteshell Provincial Park	2,663.3	2,194.2	82%

[1]Swan River District.
[2]Cranberry Portage District only.
[3]Lac du Bonnett and Bissett Districts.

Summary of Park Revenue

(April 1st, 1986 to March 31st, 1987)

Park Use	Total Revenue 1985-86	Total Revenue 1986-87
Park Fees:		
Camping	1,410,803	1,408,614
Park Entrance (Daily)	245,608	294,288
Park Entrance (Seasonal)	287,680	301,650
Park Entrance (Bus)	1,100	1,340
Sub-total	$1,945,191	$2,005,892
Games Areas:		
Golf Course (Hecla Island)	164,385	185,750
Golf Course (Falcon Lake)	215,954	252,731
Tennis Court (Falcon Lake)	5,398	38,820
Miniature Golf (Falcon Lake)	24,458	38,820
Lawn Bowling (Falcon Lake)	3,348	38,820
Marina (Gulf Harbour)	2,140	2,676
Ski Tow (Birds Hill)	44,932	48,588
Ski Tow (Falcon Lake)	10,406	9,204
Sub-total	$471,021	$537,769
Rentals/Leases:		
Cabin Rental (Camp Morton)	25,275	26,563
Cabin Rental (Hecla)	35,068	33,052
Cabin Rental (Ironwood Point)	14,294	11,922
Sub-total	$74,637	$71,537
Permits/Leases:		
Summer Homes	1,671,536	1,823,507
Commercial	163,900	165,045
Lot Development Fee	163,353	154,261
Land Permits/Leases	40,360	39,679
Service Levy (Private Lots)	30,714	37,786
Miscellaneous	10,360	9,878
Sub-Total	$2,080,223	$2,230,156
Other:		
Camping (Winter Storage)	5,450	5,925
Other Games Area Revenue	867	873
Laundry Facilities	1,363	1,322
Miscellaneous	55,123	60,500
Sub-total	$62,803	$68,620

Manipogo Provincial Recreation Park. The shower building was completed and silviculture work carried out at the campground in Asessippi Provincial Park. Development was completed in the Dropmore day-use area.

In the Interlake Region the upgrading of the Grand Rapids Wayside Park was completed, and further improvements were made to the Devil's Lake Wayside Park. Buffalo Lake Wayside Park was closed. In Hecla Provincial Park road upgrading was continued, further improvements were made to the water and electrical services at the Gull Harbour Resort, and the lighthouse, winter recreation and fitness trails were completed. One picnic shelter was completed, planting and the installation of golf cart trails were begun, and a group-use site was designated. The upgrading of the main access road to Grindstone Provincial Recreation Park was continued, and the picnic sites at Little Grindstone Point were improved. In Winnipeg Beach Provincial Recreation Park repairs and preservation treatment were continued, and general landscaping was undertaken. As part of the control program against Dutch Elm Disease, trees were removed from Camp Morton Provincial Recreation Park. Additional playground equipment was installed in the beach and cabin areas. Playground equipment was also installed at Lundar Beach and Watchorn Provincial Recreation Parks and Hnausa Wayside park.

In the Eastern Region, brushing in cottage subdivisions, road improvements and back-country clean up continued in Nopiming Provincial Park. In Birds Hill Provincial Park the riding stable's parking lot and a portion of the campground roads were resurfaced, two boardwalks were replaced in the beach area, several structures were painted, and the repair of the perimeter road was continued. In Spring Hill Winter Park the two warming huts were combined into a single unit, and a weather-proof link was built between the warming hut and the chalet. In Grand Beach Provincial Park the resurfacing of access roads was continued, the redevelopment of the parking area at the main beach was completed, and the upgrading of the west beach parking area was begun. Materials were purchased for the beach safety communications system. In October a major fire destroyed 14 cottages at an estimated loss of $400,000. The owners of the destroyed cottages were assisted by the branch in a co-ordinated clean-up program.

In the Southwestern Region, the major projects in Spruce Woods Provincial Heritage Park consisted of the development of the trails, parking areas, roads and shelter at Spirit Sands, seal coating the road to the day-use and group-use areas, leafy spurge control and completion of the shower building. In Turtle Mountain Provincial Park efforts were concentrated on installation of a boat-launching ramp, a dock and fish-cleaning facilities at Bower Lake, replacement of the Disappearing Lake boardwalk, and development of facilities on the canoe route. Additional expenditures were incurred on wayside park enhancement, establishment of equestrian trails, road improvements and maintenance and equipment replacement. Shoreline stabilization was completed at Oak Lake Provincial Recreation Park and a new boat-launching ramp and dock with access road and parking lot were installed in Rivers Provincial Recreation Park.

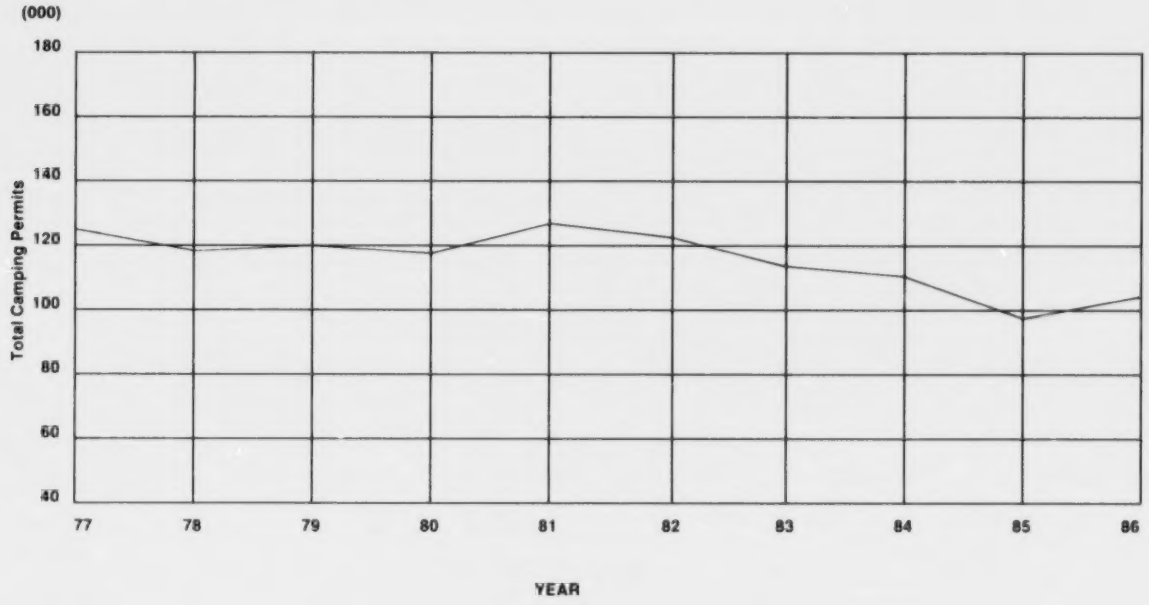
Major projects in Whiteshell Provincial Park at Falcon Lake were repairs to the roofs of the golf course pro shop and restaurant, and ground improvements to the golf course. An optical scan of the townsite sewer line was completed, and a dust abatement program was carried out on 23 kilometres of park roads which included campgrounds and the south shore road. The Beach Campground office at Falcon lake was remodelled. The displays in the Nutimik Lake Museum were upgraded and access for the disabled was provided. The lift station at West Hawk Lake was upgraded along with repairs to the lagoon. Materials were purchased for a dock at Big Whiteshell Lake. Docks were completed at Toniata Beach and Caddy lake.

Upgrading of canoe routes, development of back-country facilities, ongoing back-country clean-up, equipment replacement, sign construction and installation, gravel stockpiling and replacement of sanitary landfills also required significant commitments of manpower and funds.

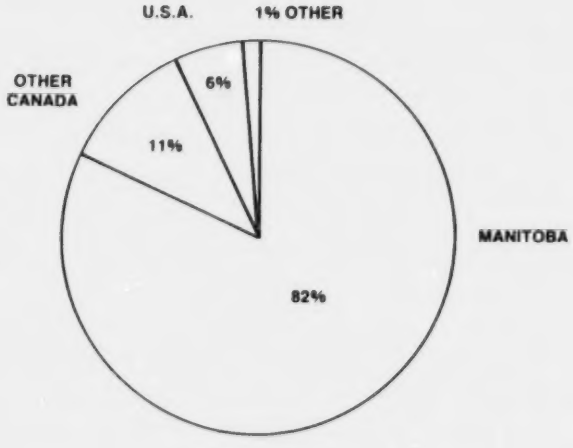
At St. Malo Provincial Recreation Park in the Southeastern Region the washroom buildings were improved, dead and overmature trees continued to be removed from the campground areas, tree planting in the overflow camping area was started, and 30 campsites were provided with electricity. In Stephenfield Provincial Recreation Park the removal of diseased and hazardous trees from the camping area, leafy spurge control and upgrading of the water supply system were continued. Hard surfacing of the entrance road and a water supply system were continued. Hard surfacing of the entrance road and the installation of a well were completed at St. Ambroise Provincial Park. Projects in Beaudry Provincial Heritage Park consisted of extending and upgrading the parking lot, construction and installation of a cross-country ski shelter, installation of an entrance sign, and further progress on the tall grass prairie rehabilitation project.

The Parks Branch's consultations with the Whiteshell District Association culminated in September with the introduction of new regulations which permited greater flexibility and equity in vacation home-lot development, upgraded sewage disposal and provided for a variance procedure where justified. A variance committee and its terms of reference were in the final stages of readiness by year end. Upgrading of the sewage lagoon at

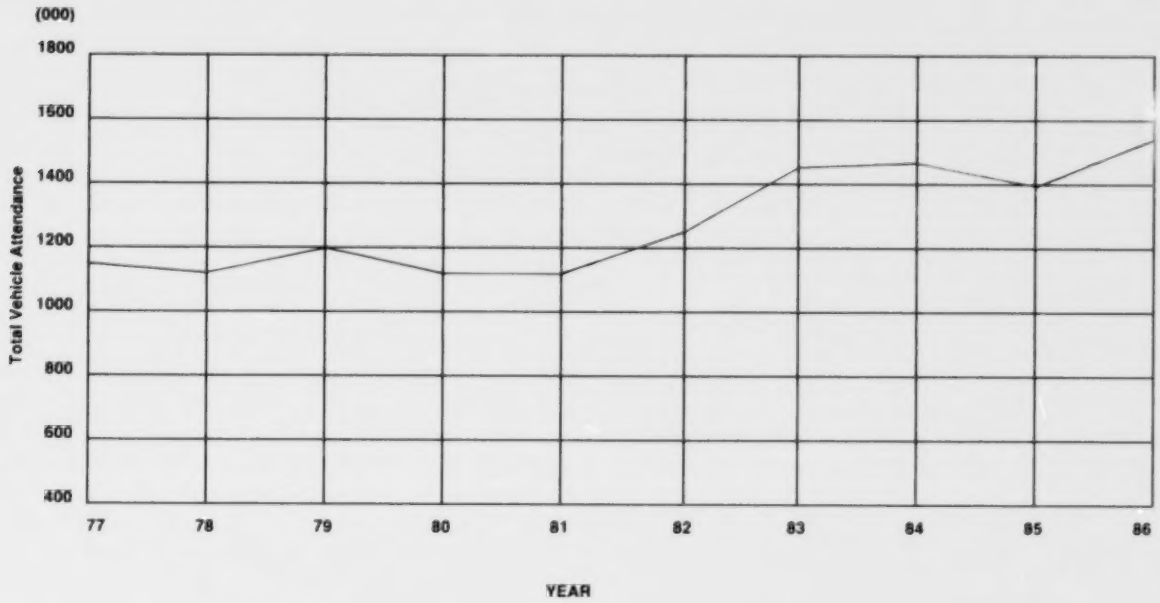
Camping Permits Issued



Origin of Permit Holders, 1986



Vehicle Attendance



Park Entrance Permits

Year *	Daily Permits		Daily Bus Permits		Seasonal Permits		Total Permits	Total Permits
	Number	Revenue	Number	Revenue	Number	Revenue		
1983	160,380	$320,758.00	50	$ 580.00	29,451	$294,510.00	189,881	615,848.00
1984	163,163	$326,326.00	95	$1,030.00	29,888	$298,880.00	193,146	$626,236.00
1985	122,804	$245,608.00	98	$1,100.00	28,768	$287,680.00	151,670	$534,388.00
1986	147,140	$294,288.00	114**	$1,340.00	30,165	$301,650.00	177,419	$597,278.00

* *Includes revenues and permits collected at the Winnipeg office:*
1983 — $490.00; 1984 — $430.00; 1985 — $480.00; 1986 — $466.00

** *Includes seasonal bus permits.*

Campers Cove in Clearwater Lake Provincial Park resulted in discussions with local park users. Application of service fees continued to be a cause of frequent discussion with owners of private land in Whiteshell and Clearwater Lake Provincial Parks. The collection of service fees through Small Claims Court was initiated on two accounts which were in arrears.

Capital Expenditures

($000's)

Major Parks	1983-84	1984-85	1985-86	1986-87
Asessippi Provincial Park	29.1	19.6	44.2	87.9
Beaudry Provincial Park	39.8	38.4	47.6	20.0
Birds Hill Provincial Park	196.2	104.8	99.0	90.0
Clearwater Lake Provincial Park	40.2	19.0	60.2	69.0
Duck Mountain Provincial Park	48.2	51.0	53.0	31.0
Grand Beach Provincial Park	118.8	101.7	80.0	48.7
Grass River Provincial Park	24.9	20.0	18.0	15.0
Hecla Provincial Park	544.4	638.7	829.7	364.0
Nopiming Provincial Park	78.6	48.4	80.1	15.5
Spruce Woods Provincial Heritage Park	128.3	111.6	130.9	79.8
Turtle Mountain Provincial Park	42.9	60.6	48.6	48.2
Whiteshell Provincial Park	741.6	542.4	554.0	431.8

Park Patrol

The park patrol program continued to be implemented by the Regional Services Branch on behalf of the Parks Branch. Seasonal patrol officers were hired to assist Natural Resource Officers in their public relations and enforcement duties.

The groundwork initiated in 1985-86 combined with the increase in preventive patrols and poor weather conditions in 1986-87 were believed responsible for the greatly reduced number of offences, both detected and reported, in Paint Lake Provincial Recreation park. Park patrols at Clearwater Lake Provincial Park in the Northwestern Region were increased, particularly in the day-use areas during peak periods. While this resulted in an increase in offences detected, it also resulted in a significant decrease in vandalism. The continued presence of preventive patrols, emphasis on public relations and strong community support and involvement in the Snow Lake and Flin Flon areas were identified as being the major reasons for the low incidence of problems at Wekusko Falls Campground and Bakers narrows Provincial Recreation Park.

In the Southeastern Region the patrol systems were introduced at Norquay and Lynch Point Provincial Recreation Parks. However, at St. Malo Provincial Recreation Park there was little change over 1985-86. At Moose Lake Provincial Recreation Park the public response to the first-time presence of a park patrol officer was very positive.

In the Whiteshell Region there was an observable decrease in rowdiness and a change to more family-oriented camping in the Falcon Lake area in 1986-87 as a result of the continued emphasis on public awareness of campground rules. It was also observed that the media's campaign against liquor abuse strongly enhanced and complemented patrol efforts. There were also fewer offences in the Rennie patrol area.

In Spruce Woods Provincial Heritage Park poor weather seemed to have put a damper on some of the problems experienced in past years. A similar quiet year was also recorded for Rivers Provincial Recreation Park. In Turtle Mountain Provincial Park, as a result of higher attendance in the day-use and beach areas, the number of reported thefts was more than in 1985-86.

In Nopiming Provincial Park in the Eastern Region there was a significant increase in disturbances, particularly at Tulabi and Bird Lake campgrounds. It was believed that some of the offenders were those displaced for rowdyism from those parks that have been intensifying their control efforts. In Grand Beach Provincial Park, public safety and security occurences remained at previous levels. There was a 34% increase in the number of charges recorded in an effort to show more strictness. In Birds Hill Provincial Park there were no major difficulties because of the effective relationship with the local R.C.M.P.

In Hecla Provincial Park the maintenance of the patrolling strategy begun two years ago continued to result in fewer offences.

In the Western Region the offences recorded at Asessippi Provincial Park were minimal. There were also fewer offences in Duck Mountain Provincial Park, and a small number of problems at Rainbow Beach and Manipogo Provincial Recreation Parks.

Approximately 128,335 visitors were in contact with 88 officers during the 1986-87 season. These officers provided information to 76,155 visitors, responded to 333 emergencies, issued 972 written warnings and laid 1,275 charges. The workload distribution of the park patrol officers was 59% information, 12% enforcement, 12% prevention and 17% other duties.

Beach Safety

The reduced attendance at beaches noted in 1985-86 continued into 1986-87. Only one beach of the 11 patrolled showed an increase, and that was slight. The emphasis on hiring those with National Life Saving qualifications was continued. A new upgrading program begun in 1986-87 required beach captains and assistants to attend a one-day workshop on water safety and life-saving theory, techniques and practical exercises. These personnel then provided all other beach safety officers with this training and testing program. Another new initiative in 1986-87 was the establishment of a beach safety review committee whose objective was to establish standards for supervised and unsupervised beaches and, generally, to upgrade the effectiveness of the beach safety program in provincial parks. Eleven beaches in provincial parks frequented by an estimated 787,000 users were patrolled by 64 officers in 1986-87. These officers provided first aid to 507 persons and made 187 rescues. One drowning occurred at Birds Hill Provincial Park.

Visitor Services

More than 1.5 million vehicles entered Manitoba's provincial parks in 1986-87 with vehicle counts in the top ten parks up 8.1% from the previous year, and 7.2% overall. The number of camping permits issued increased by 7.5%

Co-operative Activities

The program of co-operative activities introduced in 1985 was continued. Eleven co-operative projects were completed, of which five were through signed co-operative agreements. The value of these contributions was estimated to be $150,000. Five projects that were currently in progress under signed agreements included a ski chalet addition with The Pas Cross-Country Ski Club, a teacher's guide and education trail with the Manitoba Educators for Social Responsibility, walking trails and playground equipment with the Grindstone Cottagers' Association, and theatre presentations in parks by Sandscript Roadshow and Players.

Following a number of public meetings, two co-operating associations were incorporated. The Friends of Spruce Woods Inc. signed a co-operative agreement with Manitoba Natural Resources on June 16th 1986. This group hired one staff person, with the assistance of job creation programs, to organize public activities in Spruce Woods Provincial Heritage Park in the summer of 1986. The Friends of the Whiteshell Inc. signed a co-operative agreement with the department on February 21st 1987.

A pilot volunteer campground host program was begun in Turtle Mountain Provincial Park. One camper volunteered to distribute information to other campers for weekends in July and August. A reception for volunteers in provincial parks was hosted by Parks Branch to coincide with the premier's volunteer reception in September 1986. Twenty-two volunteers attended.

Interpretation Program

Several publication, sign and display projects were completed during the fiscal year. Several of these involved joint funding with other branches of the department, inlcuding one project undertaken in co-operation with Manitoba Hydro.

The seasonal program consisting of amphitheatre programs and special events conducted by visitor services attendants continued to be well received by park visitors.

Promotion

The Visitor Services Section continued to advertise services and facilities programs such as the dial-a-site, campground opening dates, golf courses, ski hills, family vacation cabins, etc. Many park programs received extensive complimentary promotion through existing and newly established contacts with local media. Major coverage was again provided in the "Outdoor Supplement" of the **Winnipeg Free Press**. Continued liaison with Travel Manitoba resulted in provincial parks being given high priority in their radio, television and print promotions. Provincial parks were also promoted during Wildlife Week and Environment Week and at the "Travel '87 Show" held in the Winnipeg.

Special Events

Several major special events took place in both the winter and summer and met with even more enthusiasm by organizers and participants this year than last year. Some of the more popular winter events included Beaver Days and the Mantario Fun Rally in Whiteshell Provincial Park, the Grand Beach Ski Loppet and sled dog races, and the Spruce Woods Ski Loppet and sled dog races. Some of the more popular summer events were Pine Fort Days at Spruce Woods Provincial park, and the Sun Fun Run and the Sandcastle Building Contest at Grand Beach Provincial Park.

Public Information Services

This branch plans and co-ordinates communication programs to identify public needs and provide information about resource policies and programs.

Responsible resource stewardship was the underlying theme of departmental communications during the year, complementing a government wide emphasis on sustained economic development, maintenance of services and quality of life.

Education

The Manipac collecting card program, which encourages resource education projects among Grades 5 and 6 students, was enlarged to include a second, forestry-based card series. Delivered in both English and French, Manipac received an award from the International Coalition for Land and Water Stewardship in the Red River Basin.

New in 1987 was the development of six television programs entitled "Video Kids Nature Magazine" involving Winnipeg elementary schools, sponsored by Manitoba Natural Resources.

Media and Community Relations

Cost effectiveness concerns and the need to reach new sectors of the public prompted several changes in this area. A co-operative venture with CKY-TV allowed television reporting of ski conditions on a weekly basis during the evening news package. Weekly German language resource reports were provided for a local ethnic radio station. Daily (English) reports were initiated through Native Communications which operates on almost all northern Indian reserves.

Natural disasters such as floods and forest fires occur irregularly, greatly increasing resource communication requirements on a temporary basis. A crisis communications procedure was developed to provide guidelines for dealing with such occurrences. It was extensively reviewed within and outside the department and sucessfully tested during the short-term spring flooding in 1986.

Demand for videotape copies of films in the lending library continued to increase. Expanded distribution through a private video rental store made them more available to Winnipeg school teachers, outdoor clubs, and the public at large.

A monthly staff newsletter was developed and an editor hired. Distribution to all permanent and term resources staff was scheduled to begin with the start of the new fiscal year.

The weekly radio program "Resources News" continued to provide an efficient vehicle for fast program publicity and general resource information. Produced and distributed in multiple formats to satisfy the needs of the electronic media, it was also circulated as a newsletter to the print media and posted on departmental bulletin boards.

Also continued were the resource inquiry service and a weekly news-clipping service. Both served to monitor public concerns and to provide feedback on the success of advertising and publicity programs.

Media and Community Relations Summary

	1986-87	1985-86	1984-85
Direct Public Services			
Public Inquiries	16,471	18,661	25,444
Publication Requests	3,108	2,853	3,796
Film Loans	1,035	946	1,172
Publicity			
News Releases	114	105	156
Special Events (Press Conferences, Ceremonies)	9	11	105

Publications, Signs and Displays

Design, production and distribution of print materials, signs and displays were expedited by this section. Most projects were developed as part of a particular resource program and are therefore reported elsewhere in this report. The section was also responsible for the quarterly resource essay "Conservation Comment" and co-ordinating preparation of annual reports required under various pieces of resource legislation.

The need to increase the visual impact of print materials with strong and consistent design prompted the development of standardized designs for provincial parks, wild rice, surveys and mapping, and sport hunting materials.

Publications, Signs and Displays Summary

	1986-87	1985-86	1984-85
Publications Produced			
New	17	15	13
Reprinted	37	31	65
Displays			
New	1	6	
Refurbished	—	1	5
Signing			
New Multi Sign Projects	15	12	18
Miscellaneous	10	26	19
Miscellaneous Printed Materials (Posters Crests, etc.)	75	90	70

Regional Services

This branch enforces resource Acts and Regulations; delivers resource management programs for the public and other government agencies; operates and maintains provincial parks; manages the forest fire prevention, detection and suppression programs.

Regional Activities

Northeastern Region

Fisheries
A total of 504 fishermen were involved in commercial fishing on 85 lakes in the Northeast Region during the summer of 1986. Total production was down slightly from the previous year as fewer lakes were fished.

There were five active commercial sturgeon fisheries involving 17 licensed fishermen. Total production was down slightly from the previous year.

During the winter of 1986-87, 211 fishermen were active on 33 lakes with another 35 being fished under general permit. In spite of higher prices, production declined due to poor operating conditions.

Activity in the Northeast Region by sport fishermen was about the same as the previous year.

Forestry
Manfor continued to operate in the Joey Lake Road area with 12 skidder crews. Construction on the Johnson Road continued.

Heavy precipitation during the 1986 fire season resulted in a low number of fires in the Northeast Region. A total of 85 fires occurred, resulting in a loss of nearly 10,000 hectares.

A hose patching depot was established at Paint lake and proved to be successful.

Parks
Development continued on the recreation facilities at Paint lake, including the baseball and soccer playing field.

Poor weather, Expo 86, and an Inco shut-down combined to reduce activity in some of the campgrounds in the Northeast Region.

Wildlife
The 1986 moose season was considered normal with an average number of animals taken.

Upland game bird numbers remained about average, with a slight increase in the ruffed grouse population.

The Hudson Bay Coast provided good goose hunting from north of Churchill to the Kettle River.

Barren-ground caribou again moved down into the South Indian Lake, Tadoule Lake and Churchill areas in significant numbers.

The overall number of complaints regarding wolves remained about the same as last year with a short flurry of complaints in the Wabowden and Nelson House area where a number of dogs were killed by wolves.

The 1986 Polar Bear Alert Program got underway August 26th when additional staff were established at Churchill. There were a total of 75 occurrences reported and actioned in the control area. A total of 28 bears were captured and four of these were sent to zoos.

Responses to a questionnaire circulated in Churchill regarding the Polar Bear Alert program were again positive. The results indicated that 90% supported the control program.

Freeze-up occurred earlier than normal (on November 1, 1986) resulting in the Alert Program being terminated on November 15, 1986.

Enforcement
The Northeast Region directed its main enforcement effort at remote activities such as angling, commercial fishing and hunting. The number of wildlife occurrences was about normal, with the number of enforcement actions up slightly at 120 charges and 65 warnings. An initiative to curtail spring hunting of migratory birds in the Nelson River area was undertaken during the spring of 1986.

Special Projects
Experimentation continued with wild rice operations in the Northeast Region.

The region continued to maintain an office at Sundance to oversee Limestone related activities. The resident officer made good progress in having the major contractor comply with conditions of the work permits.

Parks Canada took over provincial facilities and land at York Factory to be included in the historic site at that location.

Northwestern Region

Fisheries
Summer commercial fishing production was down slightly and winter fishing decreased considerably because of adverse travelling conditions.

A management agreement with the people of Sherridon/Cold Lake was signed for the future management of Kississing Lake. This agreement resulted in the initiation of slot limits for Kississing Lake to ensure better management for angling purposes.

Parks
An additional 20 camping sites at the highly popular Gyles Park Campground (in Grass River Provincial Park) were developed.

Bakers Narrows Lodge was advertised for sale as a complete package along with the cabins and attached facilities.

The Hugo Bay campground operation was terminated due to very little usage. Buildings were successfully salvaged and stored in department facilities for redistribution in the park system.

Wildlife
The one-year hunting closure in Area 8 previously negotiated with various user and interest groups including The Pas, Moose Lake and Easterville Indian Bands, The Pas Area Wildlife Association, Cormorant and Moose Lake Community Councils, was considered a success. An extension of the agreement to November 1, 1989 was signed. It is hoped that some improvement in the moose population level will be evident by that date.

Enforcement
The region continued to direct its main enforcement effort at angling and remote area hunting. A total of 160 violations were encountered, resulting in 83 prosecutions and 77 warnings. The total number of violations was up from the previous year, mainly due to an increased effort to control rowdyism in public campgrounds.

Special Projects
A new mine was opened at Puffy Lake, 10 miles southeast of Sherridon. The access road and clearing for the power lines were completed.

There was a continued increase in claim staking, line cutting and drilling operations in the region. Exploration companies continued to pick up anomalies in the southern part of the region at much greater depths underlying the limestone formation. This has resulted in increased activity in highly sensitive areas such as Clearwater Provincial Park.

Production of wild rice in northwest Manitoba increased from the previous years and many new areas were seeded. A wild rice processing plant was partially constructed near The Pas and should be able to process a portion of next year's crop.

Western Region

Fisheries
The Lake Winnipegosis commercial fishing season normally held during the fall period each year did not open in 1986. The lake closure, the first ever, was supported by most of the fishermen on the lake. Enforcement patrols reported a 100% compliance rate as far as the commercial fishermen were concerned. The closure was intended to increase the walleye population of Lake Winnipegosis which has been declining for several years.

Forestry
The experimental program (introduced during the 1985-86 fiscal year) which provided for timber cutting authority under the permit system rather than the timber sale contract system proved successful. Prior to this program there were 92 timber sale contracts in the Western Region. By the close of the fiscal year there were only 14 timber sale contracts in force while the remaining 78 cutting operations came under the authority of permits. The result was a considerble saving in staff time and travel as well as an 80% reduction in the amount of required correspondence and documentation.

Parks
In July of 1986, a new shower and washroom building, complete with facilities for the handicapped, was opened in Asessippi Provincial Park.

Two separate wayside parks located on Lake of the Prairies (outside the boundaries of Asessippi Provincial Park) were turned over to private enterprise during the year. As the Roblin East and Pyotts Point sites were located a considerable distance from staff, it proved difficult and costly to maintain them.

Fire Management
Two volunteer fire fighting crews were established at Camperville, bringing the regional total up to thirteen. These crews were supplied with hand operated fire fighting tools for wildfires in their local areas.

Wildlife
The Canada-Manitoba Beaver Control Program along the north side of Riding Mountain National Park was operational again this year and resulted in removal of 134 dams and 29 beaver related to 60 complaints from landowners.

The bear baiting issue continued to be controversial in the Duck Mountain area with regional staff attending many meetings with interest groups. Recommendations received from the public will be instrumental in developing a policy on this issue.

Waterfowl depredation complaints were down 15% from the previous year.

Enforcement
Enforcement efforts continued to be applied to the illegal hunting of big game. Re-assignment of staff and concentrated efforts on problem areas in the Duck Mountain vicinity successfully curtailed most of the illegal hunting on road refuges.

Southwest Region

Fisheries
There were 3,123 anglers checked, resulting in 40 charges and 38 warnings. A compliance rate of 96.5% was achieved.

Lake Manitoba commercial fisheries started out well but fishing success dropped off after Christmas, resulting in an average production year.

Parks
The boat launch was relocated at Rivers Provincial Recreation Park to improve traffic flow.

Beach erosion work was completed at Oak Lake with the use of shoring timber.

There was a slight increase in park use at Spruce Woods Provincial Park in spite of the cold summer. Two wells were drilled in the winter recreation area with new lines laid to supply water to Kiche Manitou Campground. A service building was constructed at the winter recreation site in Spruce Woods Heritage Park and an information kiosk was installed at the trailhead to Spirit Sands.

Wildlife
Slightly higher than normal waterfowl depredation occurrences were actioned during the fall. A total of 278 waterfowl complaints were received.

The Canada-Manitoba Beaver Control Program along the south side of Riding Mountain National Park was again operated with a total of 417 beaver removed, 156 complaints actioned, and 332 dams removed.

Enforcement
There were 5,044 big game hunters checked, resulting in 97 charges and 74 warnings. A compliance rate of 96.6% was experienced.

With the extension of hunting time to 1/2 hour after sunset, there was a substantial increase in late hunting charges.

Landowner/hunter conflicts in the Onanole area, though reduced from previous years, still resulted in a considerable number of complaints from both hunters and landowners.

Eastern Region

Fisheries
Sport angling activities have increased in the remote area east of Lake Winnipeg as evidenced by the increased number of applications for outcamps and remote cabins. A total of 5165 anglers were checked in the region. The compliance rate was 98%.

Forestry
Abitibi-Price continued cutting operations with a slight increase in volume harvested. Mill consumption was 455,955 cubic metres, a 9% increase over last year. In the Forest Management Licence area 215,505 cubic metres were harvested, a 1% increase over last year.

Fuelwood cutting continued to be popular with an increased demand for cutting areas. Approximately 16,000 cubic metres were harvested, representing a 5% increase.

The "Cut Your Own Xmas Tree" program was once again a success with some 6000 Christmas trees being cut.

A timber sale was awarded at Berens River to stimulate utilization of jack pine for hydro poles and round timber.

In conjunction with Abitibi-Price, there were 2.94 million trees planted in the region. Some 1.31 million were planted by Abitibi-Price.

Parks
Provincial park use experienced a slight increase even though the weather was wet and cool. Camping unit days increased by 10% from 47,374 the previous year to 52,820 in 1986. Park use at Birds Hill and Grand Beach Provincial Parks increased by 22%. Grand Beach entrance permits increased from 31,400 in 1985 to 47,743 in 1986, a 34% increase.

Birds Hill Provincial Park hosted the 13th Annual Folk Festival. Attendance fell from 34,000 in 1985 to 22,094 in 1986 due to the inclement weather conditions.

On October 30th, 1986, fire of unknown origin destroyed 14 cottages at Grand Beach Provincial Park. The area has been rehabilitated with cottage reconstruction to begin early in spring 1987.

Provincial parks in the region continued to host numerous special events, such as the Sun Fun Run and Sand Castle Building Competitions at Grand Beach Provincial Park, with excellent public participation.

Wildlife
The region actioned approximately 40 problem wildlife occurrences, primarily complaints related to beavers and bears.

The Woodland Caribou tagging program continued in the Shallow and Black Lake areas through a joint venture with Abitibi-Price Ltd.

The deer management project continued in Birds Hill Provincial Park with the objective to reduce the number of road kills along PTH 59 and to improve wildlife viewing opportunities within the park.

There were 1,106 hunters checked in the region with a 96% compliance rate.

A joint venture with the Hollow Water Indian Band established a road refuge near Manigotagan. A monument was dedicated at the junction of Provincial Road 304 and the Rice River Road as a tribute to George Barker. A ceremony was attended by the Chief and Hollow Water Reserve Council and Band members.

Enforcement
Increased emphasis on wildlife, fisheries and parks enforcement resulted in 866 prosecutions and 391 warnings. Compared with the previous year, prosecutions were up by 19% and warnings were down by 5%. There were 309 evictions from provincial parks, an increase of 63% from the previous year. All evictions were liquor related.

Special enforcement efforts were undertaken on the Winnipeg River to curb sturgeon poaching.

Enforcement strategies were implemented to eliminate illegal hunting from aircraft in the Bissett/Lake Winnipeg East areas of the region.

Enforcement efforts indicated an increase in compliance from 94% to 96% for wildlife and 97% to 98% for fisheries.

Wild Rice
Harvesting activity was generally successful with some 697,000 pounds of rice produced in the region. A total of 58 wild rice licences were issued in the region.

Staff conducted three aerial inspection patrols checking all lakes that had any harvesting activity.

Fire Program
The Eastern Region experienced a below average year of fire occurrences. Only 64 fires required action, of which 33 were human caused and 31 were caused by lightning.

A training program was developed and initiated for training emergency fire fighters. A total of 96 people throughout the region successfully completed training and received their certification.

The Prevention Officer made a total of 1035 public contacts in the region, focusing on municipal officials, landowners, provincial campgrounds and Indian reserves. The objective was to promote awareness and reduce the number of people-caused fires in the region.

Interlake Region

Fisheries
Commercial fisheries patrols continued during the open water and winter seasons. Patrols were increased in Sturgeon Bay to respond to an experimental fall fishery in the area and on Lake Manitoba to prevent fishing with nets of illegal size. Commercial production within the Interlake Region was down from previous years.

There were 12,600 sport fishermen checked by staff primarily in the Red River area near Lockport with a 99% compliance rate experienced.

The number of sport fishermen checked has increased in the past three years. In 1984-85, 7,058 anglers were checked, 9,579 in 1985-86, and 12,617 in 1986-87.

Forestry
All forestry operations were hampered by warm weather and poor frost conditions. Overall, the total amount of timber products harvested remained consistent with the previous year's cut.

Moose Creek Provincial Forest was established by Order-In-Council. This became the first provincial forest in the Interlake Region.

Parks
Interlake park sites experienced heavy use throughout the summer. In particular, the Red River Road Heritage Parkway grew in popularity as a day-use area.

The first reunion for former residents of Hecla Island was held in Hecla Provincial Park. This event will continue to take place as a co-operative activity administered by former Hecla Islanders.

Hecla Village and commercial fishing demonstrations continued to attract an ever increasing number of people.

The golf course set an all time record for use with approximately 24,000 rounds played.

Wildlife
A late harvest created a severe depredation season with 397 complaints being actioned. The waterfowl season resulted in approximately 13,000 Canada Geese being harvested at Oak Hammock.

A new "any moose" season was created in Area 21A. This was well received by the hunters and resulted in a high success rate.

Overall hunting success rate remained good but hunting pressure dropped. A total of 3,917 hunters were checked with a 96% compliance rate.

Enforcement
There were 440 prosecutions during the year, compared to 360 in 1985-86. The increase was due to special efforts aimed at wildlife and sport fishing activities.

The T.I.P. Program was well received by the public with 121 TIP calls relevant to the Interlake. These contacts resulted in 39 charges and 12 warnings.

Special enforcement programs were carried out in the Lundar and Selkirk districts in the spring and fall focusing on angling and migratory birds. Public response to these projects was supportive and as a result they were planned to continue.

Crown Lands
There were 280 active Crown Land permits in the Interlake Region in 1986. Use of the Crown Land Work Permit increased in 1986 in an effort to manage activities occurring on Crown land. A detailed inventory of unauthorized cabin developments was initiated and preliminary estimates suggest that the number of such structures may exceed 100.

Southeast Region

Fisheries
There were 99 active commercial fishermen who participated in the winter fishery at the south end of Lake Manitoba. Production was considerably higher than in the past few years.

The 1986 experimental perch fishery was closed for 1987 and considerable efforts on test netting were conducted by Natural Resource Officers.

Sport fishing activity was slightly higher in the region, probably because of "catfish" publicity associated with the Red River, as well as the growing success and popularity of ice angling for perch on the south basin of Lake Manitoba.

Forestry
A fairly extensive planting program was again undertaken with a total of 1,376,228 seedlings planted in 23 plantations. 19,900 hectares were sprayed for jack pine budworm. There were 40 active timber sales and 653 own-use, 98 commercial and 10 quota permits issued.

Parks
Improved weather conditions over last year and visitors travelling to Expo in Vancouver accounted for a slight increase in campers compared to 1985. There was also a significant decrease in rowdyism.

Wildlife
There were 1,120 wildlife occurrences actioned compared to 937 in the previous year. The Winnipeg district animal control employee removed 253 animals from within the City of Winnipeg compared to 245 in 1985-86.

Big game populations remained stable throughout the region. There were in excess of 100 deer-vehicle collisions within City of Winnipeg limits. The second phase of the three year live trapping removal program was successfully conducted with 156 deer removed and relocated to outlying areas southeast of Winnipeg.

Enforcement
Hunting patrols conducted at night utilizing aircraft and ground units resulted in 40 charges, consisting of 16 for night hunting and 24 for violations of a lesser nature.

Enforcement of the various Acts and Regulations resulted in 348 charges and 233 written warnings. There were 164 T.I.P. calls this year resulting in 60 prosecutions.

Natural Resource Officers checked 1,856 anglers, 2,033 big game, 1,215 waterfowl and 122 upland game bird hunters. They also checked 66 commercial fishermen and 69 Treaty Indians exercising their Treaty Rights. Natural Resource Officers actioned 1,987 occurrences throughout the year.

Fire Program
Due to reasonably wet weather conditions throughout most of the fire season, only three fires were actioned; two were lightning-caused and the other was related to recreational activities. A total of 11 hectares of non-merchantable timber were burned. Three hundred and sixty five burning permits were issued during the year.

Whiteshell Region

Fisheries
A total of 2,928 anglers were checked with most activity taking place from May to July. Winter pressure was up from previous years. Lakes reclaimed and stocked with trout in backcountry areas began producing well. Sturgeon tagging and pickerel rearing projects continued at various locations. Sturgeon poaching on the Winnipeg River continued to be a major concern in the region.

Forestry
Sixty-seven active timber sales operated during the year. In addition, 541 timber permits were issued, mostly for fuelwood. Operators had a difficult season with an unseasonably mild winter which created both harvesting and transportation problems. Some 370,600 seedlings were planted in the region.

Parks
Transient camper days increased 3.6% despite the unseasonable weather. This slight rise can be attributed to Expo tourists passing through the province.

The Falcon Lake Golf Course experienced an increase of 3,322 rounds played for a total of 32,893. There was also increased use of the snowmobile and cross-country ski trails.

The acceptance and high use of winter recreation facilities had a direct impact on local businesses, with most accommodations booked on weekends. Downhill skiing was up slightly at Falcon Lake compared to last winter.

The Bannock Point Rehabilitation Program provided approximately 6,548 person-days of labour during the year. Most of the work consisted of brushing, cutting and splitting wood, strapping slabs, working in the nursery, general clean-up in the park, and assistance with fires.

The revamping of regulations dealing with vacation home subdivisions caused a flurry of activity and discussion amongst cottagers in the Whiteshell Provincial Park. The major changes dealt with increases to the maximum allowable square footage per lot and cottage septic facilities. There was minimal effect on development noted in this first year of change.

Wildlife
There were 1,960 hunters checked this fall in the region.

Slightly increased waterfowl and upland game bird populations provided hunters with a successful year. Deer hunters encountered heavy snow conditions, but the success rate was normal. Moose hunters recorded 50 kills this year. Illegal hunting resulted in more night patrols being conducted by regional staff.

Wild Rice
The 1986 Wild Rice season began on August 27th and proceeded without significant difficulty. The crops were rated by the pickers as poor to fair in most areas. The early opening date combined with cool weather resulted in some rice being picked green.

Increased enforcement and supervision effort in all districts kept on top of the situation as problems arose, resulting in a smoother operation for all concerned. Some 199 hand picking, 20 mechanical picker and three buyers permits were issued, with 52,000 kilograms of rice being harvested.

Legislative Services Program

The branch assisted in the development and drafting of legislation for several branches, departments and other levels of government. This included amendments to The Wildlife Act, The Fires Prevention Act, The Provincial Park Lands Act, The Crown Lands Act, The Ecological Reserves Act, The Forest Act, The Wild Rice Act, The Off Road Vehicle Act and The Provincial Floral Emblem and Tartan Act. In addition, the branch assisted with the development and drafting of regulations under a number of those statutes, plus regulations under The Surveys Act, The Water Rights Act, the Water Power Act, The Summary Convictions Act, The Fisheries Act (Canada), The Canada Shipping Act (Boating Restrictions Regulations) and The Federal Infractions Act.

The branch, in consultation with the Constitutional Law Section of the Attorney General's Department, played a lead role in the development of amendments to all legislation within the department's area of responsibility to ensure all comply with section 8 of the Charter of Rights.

The branch was also requested, in conjunction with the Regulations Unit of the Attorney General's Department, to assist in translating all regulations within the department's purview of responsibility into the French-English dual format.

Early in 1986 a decision was made to discontinue the branch's legislation development and drafting assistance program as part of the headquarters re-alignment. These legislation related activities were to be returned to each individual branch, with Regional Services limiting its involvement to a review from an enforcement perspective.

Enforcement and Court Services Program

The headquarters office continued to be responsible for the co-ordination and administration of the court, offence, warrant, suspension and disposal of confiscated goods activities of the department. In 1986, in excess of 3750 individual files and court documents were processed.

Since 1984 the branch has been involved in the development of revised offence descriptions and the establishment of set fines for all legislation within the department's responsibility area. This involved amendments to the regulations under The Summary Convictions Act which were developed in conjunction with the Court Services Branch of the Attorney-General's Department, several other enforcement orientated departments, and various police departments.

During 1986 a major re-alignment of the branch's headquarters enforcement operation was undertaken with the main objective being to decentralize the branch's enforcement, occurrence and officer-time record systems.

The enforcement program development and evaluation experimental project initiated in headquarters in 1985 was discontinued with enforcement special projects, intelligence gathering and program planning responsibility being transferred to the branch's management team and the regions.

T.I.P. (Turn In Poachers) Program

Initiated in August of 1985 as an experimental project in co-operation with the Manitoba Wildlife Federation, the T.I.P. Program became fully operational in 1986. The scope and focus of the program was expanded to include all of Manitoba and all natural resource legislation.

As of August 1, 1986, the program was administered by the Southeast Region. Calls received during weekends and outside of regular office hours were received by a commercial answering service and then relayed to field officers via designated duty officers.

On February 19, 1986, the department and the Manitoba Wildlife Federation signed a three-year contract whereby the federation would plan, develop and implement a T.I.P. public promotion program.

Public response to the program was excellent. A total of 530 calls were received during the fiscal year resulting in 138 prosecutions and 29 warnings.

Officer Training Program
In 1986-87 there was continued emphasis on officer safety. Training courses held for Natural Resource Officers during the year included Advanced Tactical Driving Techniques, Officer Safety & Self Defence and First Aid/C.P.R. Improvements were made during the year to the Natural Resource Officer Trainee orientation and field training programs. Numerous other courses, including cross cultural awareness, were also conducted.

Forest Fire Program

General Fire Situation

The greatest problem fire of the season was human caused, occurring in the Northeast region on May 27th and reaching a total burn area of 3,835 hectares by June 18th when it was declared extinguished. The suppression effort and related costs were very high on this fire due to its proximity to the Island Lake settlement of Garden Hill. However, the losses were confined to the timber resource. This period of May had been exceptionally dry when the fire occurred, with rain arriving by early June. The balance of the season throughout the province was characterized by regular periods of precipitation keeping fire starts and burn areas to a minimum.

Fire Program Operations

Thirteen aircraft were contracted at the beginning of the fire season and the fleet totalled fourteen with the July 3rd arrival of the fourth CL-215 waterbomber. This was the federal government aircraft provided under the terms of the Co-operative Supply Agreement. Air operations generally reflected the overall fire situation with activity well below average.

Following spring start-up problems the Lightning Location System worked well and was utilized as the primary aid in detection aircraft routing in remote areas. The Island Lake detection site was relocated to Bissett in an attempt to improve overall accuracy.

A new remote weather station was installed on a test basis at the Gimli A.E.S. station and was successfully linked to the computer in Winnipeg. Future plans call for the installation of a number of these in remote priority areas throughout the province.

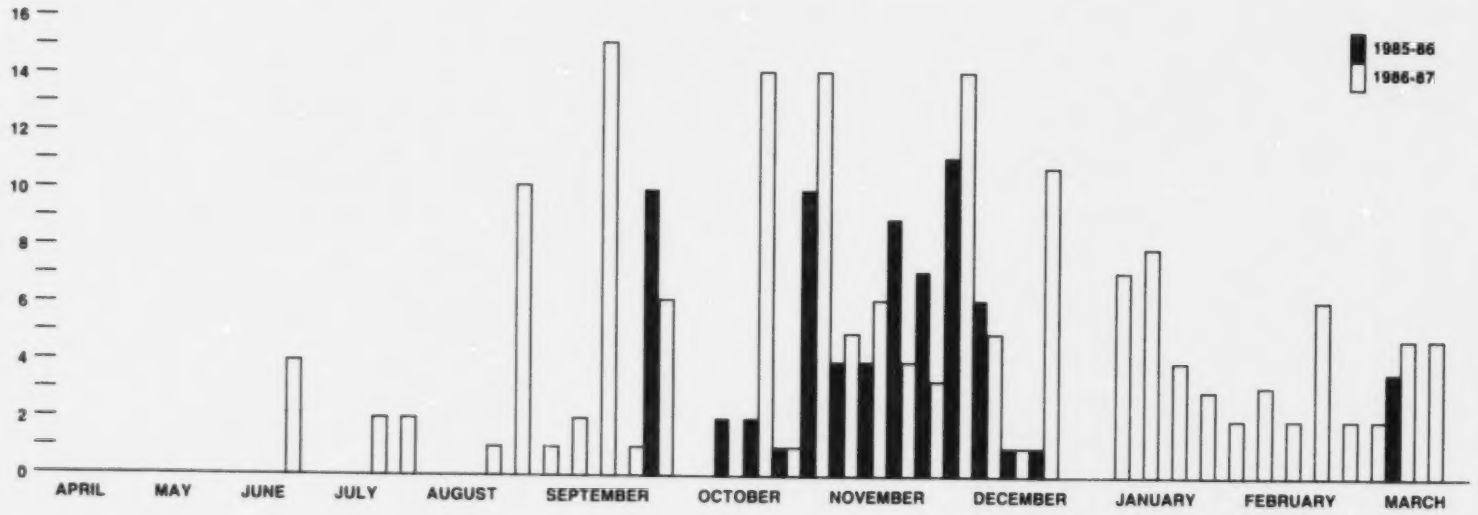
Fire training was carried out at various levels by both regional and headquarters staff and over 800 people throughout the province received this instruction.

Fire prevention activities included the use of Smokey Bear materials, as well as continuation of the Honorary Fire Guardians Program and the Native Fire Prevention effort.

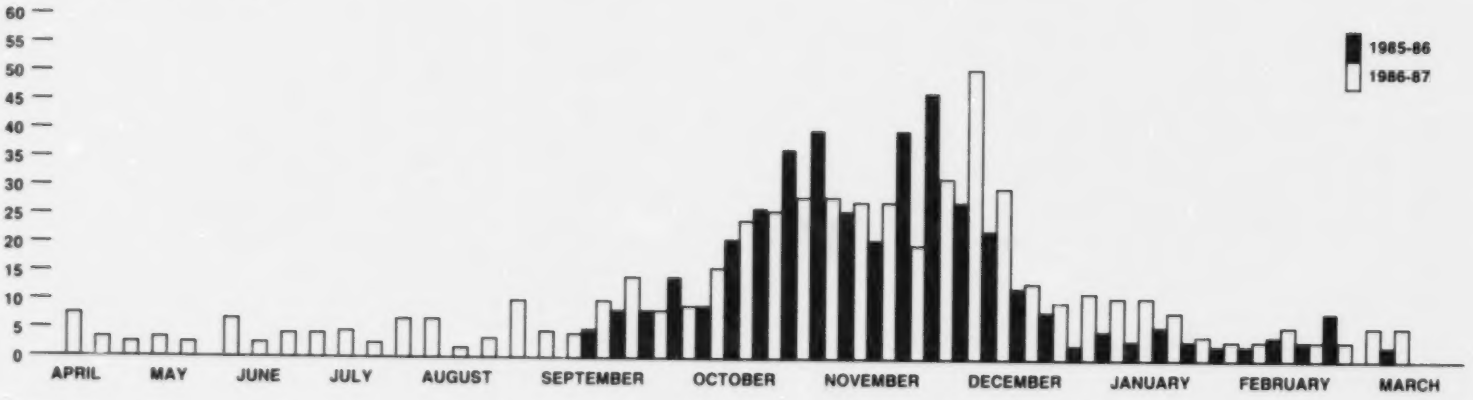
Calls By Region

Region	Number of Calls				Number of Charges			
	Fish	Wildlife	Other	Total	Fish	Wildlife	Other	Total
Southeast	6	157	1	164	1	48	11	60
Interlake	22	98	1	121	20	10	9	39
Southwest	8	99	—	107	—	3	5	8
Eastern	14	36	1	51	13	5	—	18
Western	1	44	—	45	—	2	—	2
Whiteshell	8	12	1	21	—	2	—	—
Northwest	8	6	—	14	9	—	—	9
Northeast	3	4	—	7	2	—	—	2
TOTALS	70	456	4	530	45	68	25	138

T.I.P. Prosecutions By Week



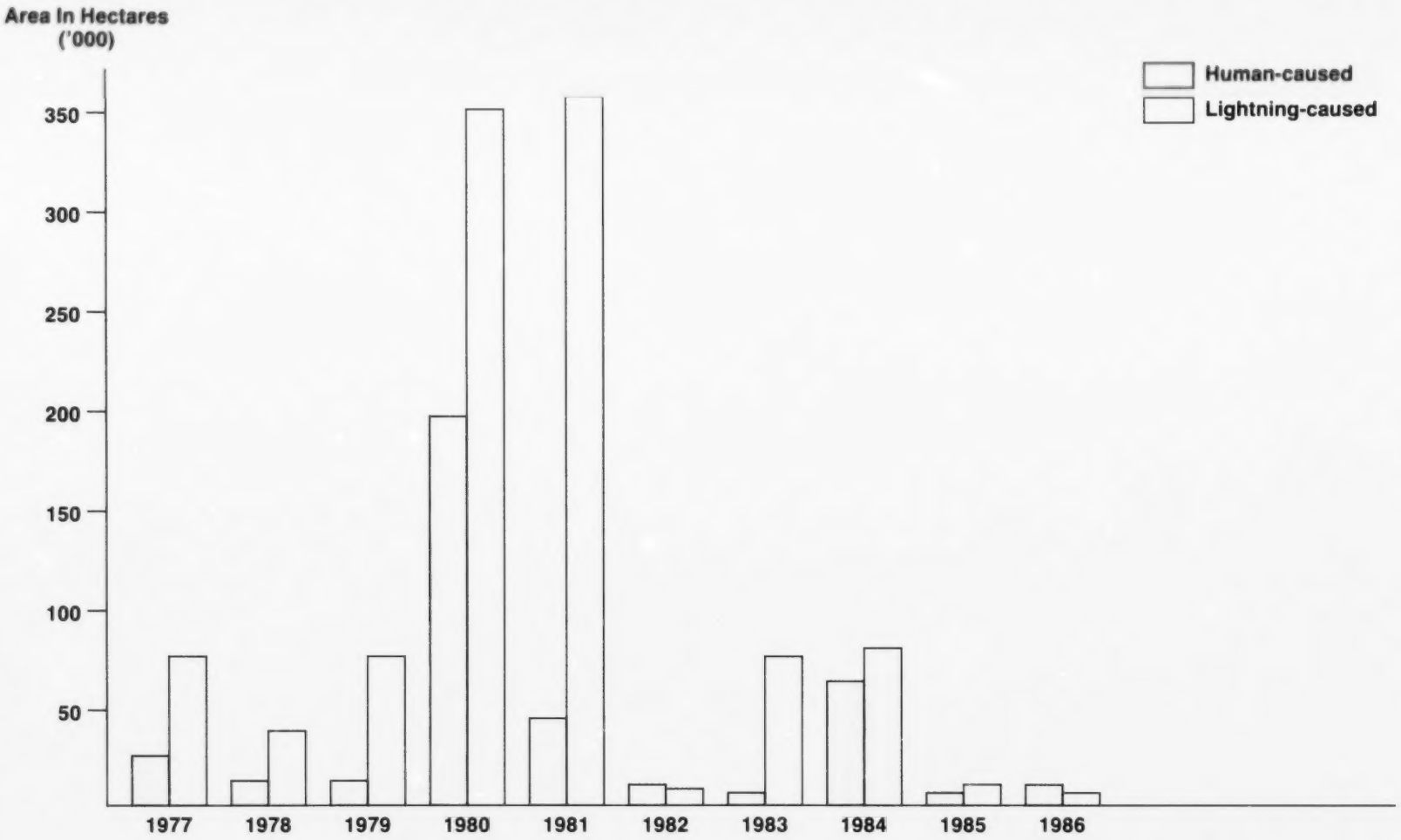
T.I.P. Calls By Week



1986 Fires

Cause	Number of Fires		Percentage		Area Burned (Ha.)		Suppression Cost	
	1986	5 Yr. Ave.	1986	5 Yr. Avg.	1986	5 Yr. Avg.	1986	5 Yr. Avg.
Recreation	53	67.4	24.4	16.6	263.9	1,231.1	247,687.0	303,883.0
Settlement	61	86.8	28.1	20.1	6,044.5	3,056.9	331,351.0	698,265.0
Woods Operations	4	4.0	1.8	.9	9.6	4.9	13,951.0	6,623.0
Other Industrial	3	3.8	1.3	.9	36.8	35.1	49,852.0	19,575.0
Railways	2	20.2	.9	2.8	4.5	154.3	2,634.0	69,731.0
Public Projects	13	12.0	5.9	3.0	55.7	147.5	55,406.0	37,043.0
Incendiary	4	34.0	1.8	7.7	55.7	2,431.5	52,100.0	257,937.0
Miscellaneous	0	7.8	0.0	1.7	0.0	32.3	.0	18,656.0
Agriculture	4	33.0	1.8	6.0	39.9	8,350.3	1,625.0	129,075.0
Total Human Caused	144	269.6	66.3	61.9	6,512.6	18,084.7	754,606.0	1,121,832.0
Total Lightning	73	173.4	33.7	31.2	3,829.6	108,480.8	479,508.0	3,116,085.0
Total	217	443.0	100.0	443.0	10,342.2	126,565.4	1,234,114.0	4,237,918.0

Area Burned by Year 1977-1986 (In thousands of hectares)



Other Programs and Activities

Other programs and activities administered by the branch included the Hunter Killed Livestock Compensation Program, the Hunter and Firearm Safety Program, and the Guide Training Program. Summaries of each of these are provided in the following tables.

Livestock Compensation Program

Year	# Claims	# Claims Paid	Total Paid	Average Paid
79-80	5	1	$ 609.50	$ 609.50
80-81	8	3	2,289.50	763.17
81-82	21	11	6,300.00	572.73
82-83	23	12	13,500.00	1,125.00
83-84	26	10	10,518.00	1,051.80
84-85	8	5	2,499.04	499.80
85-86	6	1	1,820.00	1,820.00
86-87	10	8	$5,879.47	$723.93

Hunter and Firearm Safety Program

Calendar Year	Students	Total to Date	Instructors Certified
1980	3905	78,147	51
1981	4614	82,788	63
1982	4460	87,248	45
1983	3315	90,563	58
1984	4150	94,713	47
1985	2977	97,690	38
1986	2922	100,612	28

Firearm Accidents

	Accidents			Fatalities		
Calendar Year	Hunting	Non-hunting	Total	Hunting	Non-hunting	Total
1980	9	13	22	1	2	3
1981	24	10	34	2	2	4
1982	13	7	20	0	1	1
1983	8	12	20	2	3	5
1984	13	3	16	2	0	2
*1985	12	14	26	1	0	1
1986	15	17	32	4	0	4

** Prior to 1985, Treaty Indian firearm accidents were not included in accident totals.*

Problem Wildlife Occurrences, 1986-87

Species	Region								Species Total	Percent of Total
	NE	NW	SE	SW	E	INT.	W	WH		
Beaver 100%	11	27	97	112	30	63	65	22	427	15%
Beaver 50-50	0	0	0	157	0	0	11	0	168	6%
Black Bear	73	102	18	24	57	46	76	30	426	15%
Polar Bear	68	0	0	0	0	0	0	0	68	2%
Elk) Moose) Big Deer) Game	1	1	96	115	13	45	68	3	342	12%
Wolf	12	9	6	7	4	19	25	1	83	3%
Migratory Birds	1	44	56	263	9	184	93	6	656	24%
Other	16	28	273	124	37	99	56	19	652	23%
TOTAL	182	211	546	802	150	456	394	81	2822	100%

Summary of Recorded Violations, 1986-87

	Disposition				Total Offences	Percent Increase or Decrease[1]
	Prosecutions			Number of Warnings		
	Number of Prosecutions	Number of Convictions	% Convicted			
Liquor Control	798	770	96	71	869	+1
Wildlife	557	470	84	247	804	–8
Fisheries	494	449	91	363	857	+3
Provincial Park	270	246	91	346	616	+32
Highway Traffic	186	161	87	110	296	+45
Migratory Birds	58	53	91	29	87	–23
Clean Environment	24	21	90	8	32	+3
Snowmobile	18	15	83	19	37	0
Criminal Code	13	9	69	1	14	–22
Forest	11	8	73	26	37	–41
Fires Prevention	8	7	88	18	26	–10
Petty Trespass	4	3	75	25	29	+32
Wild Rice	4	2	50	0	4	–56
Crown Lands	1	1	100	11	12	+17
Canada Shipping	0	0	0	2	2	–200
Subtotals	2,446	2,210	90%	1,276		
Total	3,722				3,722	+4

Fines: $195,988.00 (– 1%)
Costs: $33,678.50 (+ 2%)

Warnings: 1,276 (+ 5%)
Prosecutions: 2,446 (+ 4%)

[1] *As compared to the previous fiscal year, 1985.*

Most Common Violations Under The Wildlife Act, 1986-87

	Number of Prosecutions	Number of Convictions	% Convicted	Number of Warnings	Total Offences	Percent Increase or Decrease
Nightlighting	104	78	75	0	104	–10
Loaded Firearm	100	93	93	9	109	–7
Hunt on Private Land w/o Permission	53	34	64	20	73	–18
Possess Illegally Taken Animal	45	36	80	3	48	–38
Hunt From Vehicle	37	36	97	33	70	+15
Fail to Invalidate or Affix Game Tag	28	28	100	13	41	+71
Other	190	165	87	169	359	–2
TOTAL	557	470	84	247	804	–8

Total Fines: $89,610.00 (– 9%)
Average Fine: $190.66 (+1%)

Total Costs: $15,982.50 (– 4%)

Most Common Violations Under The Fisheries Act (Canada), The Freshwater Fish Marketing Act and The Fisheries Act (Manitoba), 1986-87

Nature of Offence	Number of Prosecutions	Number of Convictions	% Convicted	Number of Warnings	Total Offences	Percent Increase or Decrease
Sport Fish:						
Sportfish without Licence	109	103	94	48	157	. 4
Angle with Too Many Lines	71	69	97	9	80	. 27
Exceed Limit	47	40	85	4	51	. 12
Fail to Carry/ Produce Licence	33	28	85	193	226	. 4
Fish within 25 Yards of Fishway	30	24	80	8	38	0
Transport Unidentifiable Fish	7	7	100	7	14	– 65
Commercial Fish:						
Small Mesh Nets	16	13	81	4	20	. 20
Commercial Fish Without Licence	12	12	100	2	14	. 44
Fail to Mark Equipment	12	11	92	11	23	. 92
Fail to Comply With Permit Conditions	9	8	89	5	14	– 13
Decayed Fish	7	6	86	4	11	– 36
General Domestic Fish:						
Fish/Possess Fish Other Than In Accordance With Act/Regulations	45	39	87	9	54	– 11
Fish During Closed Season	20	18	90	7	27	– 10
Fish/Possess Fish w/o Lawful Reason	7	4	57	1	8	– 47
Other	69	67	86	51	120	. 79
Total	494	449	91	363	857	. 3

Total Fines: $25,841.00 (– 8%) Total Costs: $2,278.50 (– 27%)
Average Fine: $58.00 (– 15%)

Wildlife, Fisheries, Parks and Migratory Birds Prosecutions

Fiscal Year	Wildlife	Fisheries	Parks	Migratory Birds
1977-78	698[1]	276[2]		
1978-79	804[1]	321[2]		
1979-80	782[1]	370[2]		
1980-81	438[1]	446[2]		
1981-82	897	597[2]	179	69
1982-83	557	475[3]	108	22
1983-84	604	555[3]	157	30
1984-85	561	475[3]	121	41
1985-86	686	452[3]	226	83
1986-87	557	494[3]	270	58

[1] *Includes violations under The Wildlife Act and The Migratory Birds Convention Act.*
[2] *Sportfish violations only are shown for 1981/82 and earlier.*
[3] *Includes The Fisheries Act (Canada) and The Fisheries Act (Manitoba).*

Most Common Violations Under The Provincial Park Lands Act, 1986-87

Nature of Offence	Number of Prosecutions	Number of Convictions	% Convicted	Number of Warnings	Total Offences	Percent Increase or Decrease
Cause disturbance	126	116	92	182	308	+ 42
Unauthorized Fire	34	34	100	22	56	+ 6
Operate Vehicle in Non-Designated Area	24	20	83	30	54	+ 32
Damage/Deface Park/Public Property	22	19	86	5	27	– 7
Illegal Parking	14	12	86	20	34	+ 13
Noisy/Dangerous Vehicle Operation	8	7	88	12	20	+ 25
Other	36	32	89	71	107	– 27
TOTAL	270	246	91	346	616	+ 32

Total Fines: $18,100.00 (+ 21%)
Total Costs: $3,545.00 (+ 24%)
Average Fine: $73.58 (+ 3%)

Resource Allocation and Economics Branch

This branch directs an integrated and co-ordinated approach to natural resources allocation and planning; plays a lead role in allocation and planning of Crown land; administers the department's ecologically significant areas program; assists in providing a comprehensive outdoor recreation and tourism program; formulates and reviews broad departmental program strategies.

In September of 1986, the Economics and Program Review Section and the Resource Allocation and Planning Branch were integrated. This enabled the branch to comprehensively address the management, planning, and sound economic use of the province's natural resources. Departmental programs and policies were reviewed, analyzed, and developed to ensure that these objectives were achieved. Conservation and progressive environmental management was pursued through legislation and the administration of programs such as the Ecologically Signifcant Areas. The development of a comprehensive outdoor recreation and tourism program became a major focus of the branch.

The Resource Allocation and Economics Branch dealt with a broad range of natural resource issues that involved more than one branch of the department. Through several allocation procedures co-ordinated by the branch, the process of designating the land base of the province with appropriate caveats for different uses continued.

Northern Land Management

Interdisciplinary land use plans for several areas in northern Manitoba continued to be developed. The Provincial Overview Plan for the East Side of Lake Winnipeg was completed in consultation with other branches of the department, and with the cooperation of other government departments. The branch chaired an interdisciplinary task force on a Ducks Unlimited project in the The Pas area, and brought the matter to a successful conclusion. Input was provided into a variety of land use requests for the permit, lease, and sale of Crown land throughout northern Manitoba. The progress of the Flood Agreement and Land Entitlement issues in the north continued to be monitored by the branch.

Southern Crown Land Management

In southern Manitoba, Crown land management planning is the responsibility of the Crown Land Classification Committee. The branch acted as the focus for the Committee providing management, planning and technical support. During the year, three Provincial Crown land plans and one major plan development were approved by the Provincial Land Use Committee of Cabinet. The study requested by the LGD of Fisher respecting land use for LGD land was completed and approved by Council. Three draft plans were prepared and circulated for comment while work continued on six outstanding projects. Ten new projects were initiated and one project was deferred.

The Crown Land Classification Committee also processed and reviewed a number of proposals for the establishment of new provincial forests, wildlife management areas, provincial parks and ecological reserves.

The committee considered 52 agricultural Crown land sales, recommending approval of 15 and disapproval of 37. Additionally, 27 appeals were considered and actioned. Eight Crown land exchanges were reviewed and five approved.

The yearly update of the "Interdepartmental Operational Crown Land Plan" report was completed along with a complete revision of the Committee's "Policy and Procedures Manual".

Summary of Activities: Crown Land Classification Committee

	Area	Status	Comments
1.	Washow-Fisher Peninsula	Plan Approved	
2.	Catfish Creek Land Use Study	Plan Approved	
3.	Lac du Bonnet Planning District	Plan Approved	
4.	Eastern Interlake Planning District	Amendment Approved	Plan Consolidated due to major amendment
5.	LGD Fisher	Study Completed	LGD lands Plan approved by Council
6.	Lake of the Prairies, RM Shellmouth, Roblin Planning District	Draft Plan Under Review	
7.	RM of Woodlands	Draft Plan Under Review	
8.	RM of Silver Creek	Draft Plan Under Review	Request from Heritage Marsh Advisory Committee
9.	Del-Win and Morton-Boissevain Planning District	Planning Continued	RM Winchester formed a Planning District called Del-Win
10.	RM Sifton	Planning Continued	Request from Heritage Marsh Advisory Committee
11.	Selkirk and Area Planning District	Planning Continued	
12.	LGD Armstrong	Planning Continued	Request from Heritage Marsh Advisory Committee and LGD lands plan
13.	Northern Interlake	Planning Continued	
14.	Saint Lakes Area	Planning Continued	
15.	LGD Consol	Plan Initiated	
16.	LGD Alonsa	Plan Initiated	Request from Conservation District & LGD land Plan
17.	RMs Ochre River, McCreary, Ste. Rose	Plan Initiated	Request from Conservation District (Turtle Marsh)
18.	Waterhen Community	Plan Initiated	
19.	RM Tache	Plan Initiated	

Summary of Activities: Crown Land Classification Committee

Area	Status	Comments
20. RM Ste. Anne	Plan Initiated	
21. RM La Broquerie	Plan Initiated	
22. Winnipeg River Planning District	Plan Initiated	
23. Western Interlake Planning District	Plan Review Initiated	5-year mandatory review
24. Cypress Planning District	Plan Review Initiated	5-year mandatory review
25. Mars Sand Hills	Project Deferred	Recreation Study
26. RM Swan River	Draft Plan Under Review	No change in status since 1984

Municipal Planning and Resource Management

The provincial land use policies and departmental objectives provided the foundation for the positions advanced by the department in the development of planning district and municipal planning documents.

Six "Planning Reports on Natural Resources" were completed while work continued on one report. In addition, the branch co-ordinated the assessment and evaluation of a number of draft municipal planning documents and directed the department's review of proposed subdivisions.

During the year the branch processed 64 Crown land sale requests through the clearance procedure under the Agricultural Crown land sale program. Seven parcels of Crown land were also processed under the LGD/Crown Land Exchange program.

The **Crown Lands Handbook for Agro-Manitoba** which contains maps showing the location of Crown lands in southern Manitoba was updated to December 31, 1986.

The Branch co-ordinated the preparation and presentation of the department's needs and priorities for soil surveys to the Soil Survey Advisory Board.

Natural Resources Planning Reports: 1986-87

Planning Authority	Area	Status
1. Birtle Council	Town of Birtle	Report completed
2. Russell-Binscarth Planning District	RM Russell, Town of Binscarth	Report completed
3. Roblin Planning District	LGD Park (North)	Report completed
4. Del-Win Planning District	RM Winchester, Town of Deloraine	Report completed
5. Louise Planning District	RM Louise, Village of Crystal City & Pilot Mound	Report completed
6. Village Notre Dame de Lourdes	Village	Report completed
7. Souris- Glenwood Planning District	RM Glenwood, Town of Souris	Report under preparation

Co-ordination and review of a number of water/drainage schemes was accomplished through the Resource Allocation Working Group (a multi-disciplinary committee which represents all the department's branches). Work continued on a number of lake management strategies.

Heritage Resource Conservation

The Resource Allocation and Economics Branch carried forward the departmental input into the National Task Force on Environment and Economy for the Canadian Council of Resource and Environmental Ministers. The branch was also involved in the Riding Mountain program, "Man in the Biosphere."

The branch furthered its efforts of preserving unique, rare and representative examples of Manitoba's ecosystems through development of the provincial ecologically significant areas program. This program was an expansion from its predecessor, the ecological reserves program. It was designed to recognize privately owned, voluntarily protected lands and acknowledge special areas of Crown land receiving protection in selected provincial parks, wildlife management areas, and provincial forests. All mechanisms were put in place for recognizing the voluntary protection of ecologically significant areas. Twelve locations were considered, five of which were worthy of recognition.

Four Crown land locations were identified and assessed for possible designation as ecological reserves. Two were recommended for ecological reserve status and two continue to be under active consideration. The existing ecological reserves consisted of seven areas occupying approximately 15,600 hectares of land and water. They include bog lakes and bogs supporting moisture loving plant communities, coarse sand hillsides where jack pine, lichens and other drought tolerant plants dominate and areas of mature and immature mixed forest.

Direct support for the Canadian Council on Ecological Areas continued with Manitoba's representative being elected for a three year term as chairperson.

Environmental Quality

The introduction of Manitoba's new Environment Act gave a strong focus to the branch's activity in environmental matters. The branch represented the department on the technical advisory committee reviewing the Act. This led to a full departmental review of branch programs and recommendations that will ensure that departmental development activities are consistent with the intent of the new Act.

Departmental positions regarding impacts of major development on natural resources were prepared for several power lines, new roads, water schemes and bridge developments throughout the province. Impact management recommendations were designed to maintain and enhance natural resources and the environment associated with each development.

Economics and Program Review

The Economics and Program Review section continued to assist departmental management in using funds efficiently and effectively by providing analytical, economic and evaluative support services. Analytical and economic studies in 1986-87 included:

- analysis of the potential benefits and costs of a proposed Ducks Unlimited development at Root and Reader Lakes near The Pas
- an economic analysis of elk ranching
- provision of economic analytical input into several proposed projects being studied by the Conservation Districts Authority including Cooks Creek and the Portia Project
- preparation of a paper on benefit-cost and economic analysis of parks for a federal/provincial Parks Conference
- review of the province's forest stumpage system
- development of a proposal for recovery of forest renewal expenditures

A large number of special assignments were carried out, including:

- co-ordination of Manitoba's representation in the softwood lumber dispute
- co-ordination of the reporting and analysis of branch performance and trend indicators, objectives and goals
- representation on the Northern Development Agreement Program Advisory Committee
- co-ordination and analysis of the results of the 1986 Parks Visitor Survey
- development of recommendations for clarifying the Department's economic development strategy
- analysis of the financial impact of resource management policy changes on commercial operators
- provision of project management for economic research projects carried out under the Canada-Manitoba Forest Renewal Agreement, including the publication of a directory of Manitoba wood-using industries and conducting time and motion studies for silviculture and logging activities
- development of a computer model for analyzing TIP (Turn-In Poacher) data
- review and simplification of several forms used by Regional Services to collect management information

— review of performance indicators for the fire management program

— co-ordination of departmental input to the Manitoba Trade negotiator's office

— provision of economic analytical input on the Fire Prevention Task Force

— development of policy options related to the recovery of costs of suppressing fires originating on private lands in rural municipalities and local government districts

Outdoor Recreation and Tourism

The Resource Allocation and Economics Branch spearheaded the task force on outdoor recreation for the department. A strategy was recommended that could significantly increase the focus on outdoor recreation and enable the department to respond to increased public demand.

The branch implemented the provincial land use policy on the safe- guarding of scarce recreation and scenic resources, provided site-specific outdoor recreation management plans and developed policy guidelines for outdoor recreation development on Crown land.

A policy for the private development of recreational opportunities on Crown land was developed in conjunction with Lands Branch and the Interdepartmental Planning Board and received endorsement from the Provincial Land Use Committee of Cabinet. Outdoor recreation assessments and evaluations were prepared for reports relating to the Manitoba Environmental Assessment and Review process, to Crown land allocation and to municipal planning.

As the department's representative on the Interdepartmental Rail Lines Abandonment Committee, the branch co-ordinated the departmental review of abandoned rail lines and station grounds. Most of the lines in the first gifting agreement were in the process of reverting to private ownership. The branch continued, however, to promote recreational trail development where feasible.

The branch represented the department on the Licencing Advisory Committee of Manitoba Economic Development and Tourism. The branch reviewed over 100 applications for lodges, outcamps, boat, motor and fuel caches throughout the province and made recommendations based on the availability of natural resources to meet the demands of the tourism industry. These reviews were conducted through all branches and departmental positions established by the Resource Allocation Working Group. Those decisions continued to reflect the department's desire to allocate the province's resources wisely and in the best interests of all Manitobans.

Surveys and Mapping

This branch administers The Surveys Act (Part II); provides legal land descriptions for permits and leases under various provincial acts; administers all provincial geographical names; conducts land surveys as required by government agencies; implements and maintains a provincial system of legal and control surveys; provides a geocoding base for computer land information systems; produces topographical and geographical maps; maintains a map distribution system, air photo library and remote sensing centre.

Land Description Services

Legal land description and liaison services were provided for all Crown land transactions such as plans of subdivision, land or mineral exchanges, the Agricultural Crown Land Sales Program and for permits and leases under The Crown Lands Act and The Mines Act. The branch also provided Consents and Orders of the Minister under The Municipal Act and The Municipal Board Act to expedite the conveyance of mines and minerals for the purposes of land subdivision.

Activity	1985-86	1986-87
Requests for service from government and private sources	637	634
Legal Descriptions prepared	651	681
Area calculations	81	127
Right-of-Way Agreements	25	24
Survey Requirements	24	17
Ducks Unlimited Agreements	11	5
Mines and Minerals Reports	34	45
Consents and Orders of the Minister	43	30

Manitoba Geographical Names Program

The Manitoba World War II Casualty List continued to be the main source of names for geographical features. Thirty-one names were applied during the last year, highlighted by the naming of John Osborn Lake after Company Sergeant Major John R. Osborn, V.C. He was killed in action in Hong Kong in 1941 and was posthumously awarded the Victoria Cross for his heroism and self sacrifice.

Liaison with government branches and departments continued through research assistance, naming features for resource identification and editing of maps, texts and related documents.

Activity	1985-86	1986-87
Requests for Toponymic Data	780	835
Geographical Name Decisions	110	91
Mapping Manuscripts/-Publications edited	34	78
Supplementary Name Location Maps compiled	36	54
Commemorative Names Certificates issued	417	191

Field Surveys

As a result of reorganization within the branch, one section became responsible for both legal and control surveys.

Continued efforts were made in retracement of the Township Land Survey System, the provision of legal surveys to various provincial agencies, and the provision of support for mapping and the geographical referencing system.

Major projects included the Pasquia Lake Polder III project, Oak/Plum Lakes Wetlands Complex, Ste. Rose Flood Protection Program, Gimli Industrial Park project, the Ecological Reserves Program, the Cottage Lot Upgrading Program and the Township 9, Range 6, W.P.M. Special Survey.

The Control Surveys staff established ground control points for two mapping projects to commence in 1987-88. They will be the first to be implemented utilizing the new digital technology.

The first project was carried out from the beginning of April to the end of June and involved the placement of control points in and around the community of Churchill.

The second project consisted of establishing ground control points for the southern Manitoba 1:20,000 scaled mapping project. This project covers a 55 township area including the City of Winnipeg and the Red River corridor.

Computer Services and Data Management

This section supported the research, evaluation and acquisition of hardware and software requirements associated with the development of "Phase II" of the digital mapping conversion program.

Significant enhancements were made to the Cadastral Positional Data System, CADCOR, and to several other major computer software systems to meet the needs for positional data by a broad spectrum of provincial

users. The development and acceptance of a positional data interchange format between the branch and Manitoba Data Services was implemented in conjunction with a geographic information system pilot project (GFIS) involving a number of provincial departments and the City of Winnipeg. Some 25,000 property corners were computed to provide the cadastral base map for the system.

Three hundred and seventy-five control survey markers within the City of Winnipeg and surrounding areas were incorporated into existing survey networks and prepared for provincial network integration to be undertaken in 1987-88. All provincial networks will, at that time, be referenced to the new national datum (NAD'83).

Positional values for 6,000 township and section corners were computed to support mapping, resource management, hydro development and other data system requirements both within the department and for external agencies.

The section responded to 272 requests for positional data and related information from several levels of government, industry and the public.

Mapping

The second phase of a three phase program to convert to an automated mapping operation for the production of topographic, geographic and land boundary maps was completed with the installation of two photogrammetric workstations, one cartographic workstation and a Calcomp drum plotter.

Topographic Mapping

Cartographic work was completed for the twenty-one 1:1,000 scaled map sheets covering the Charleswood/Westwood (8) and St. Norbert (13) areas of the City of Winnipeg and for the nineteen 1:2,000 map sheets covering the Virden (7) and The Pas (12) areas.

An extension to the 1:2,000 mapping at Melita was completed for the Department of Municipal Affairs.

To facilitate communication with map users several display maps were prepared for the proposed Provincial Topographic Base Mapping Program in southern Manitoba, including sample by-products that could be derived from the program.

Geographical Mapping

Geographic mapping services were provided to provincial departments and the public with a total of 183 projects completed.

A sampling of projects included a forest tower map, Cooks Creek and Alonsa Conservation District maps; two Whiteshell zoning maps; legal description maps of a provincial park; three provincial forests and three wildlife management areas; a control survey index map of northern Manitoba; 13 maps for Manitoba Education; nine lake depth charts; six Workplace Safety and Health regions maps; and 191 commemorative name certificates.

Revisions were made to four provincial forest maps, the National Topographic System map index, eight designated vehicle route maps, three for the Manitoba Health Services Commission, the Oak Hammock Marsh Land Ownership map, eight maps in the Game Bird — Big Game hunting brochure, three forest tower maps and one Crown lands ownership map.

Plan Drafting

The legal plans of survey, township diagrams and plan revisions were provided by the unit to meet the branch's mandate in maintaining the legal survey framework.

Activity	1985-86	1986-87
Plans of Survey	128	175
Township Diagrams	8	19
Plan Revisions and Memorials	225	483

Map Distribution and Remote Sensing

More than 2,000 different maps were available to government personnel and the public through the Map Sales Unit. Province-wide distribution was achieved through government offices in Portage la Prairie, Brandon, Dauphin, Swan River, The Pas, Snow Lake and Thompson. In addition, maps could be purchased at 45 outlets in private business operations. Some 52,255 maps in total were distributed during the year.

There were 12,464 aerial photographs added to the Air Photo Library to update this valuable data source. An aperture card system was maintained to allow for photo research of any area in the province. This system consists of over 2,000 microfilmed flight maps of aerial photography dating from 1923. The flight maps are grouped according to 1:250,000 scaled National Topographic System map sheets. A computer listing identifying everything in the system completes the information decks, fifteen of which are now located in various offices throughout the province, keeping users fully informed on the latest coverage available.

A climate-controlled fire-resistant vault was constructed for storage of air photo negatives returned from the National Air Photo Library in Ottawa. Having the negatives stored on location will greatly improve efficiency and turn-around time for photo prints.

The Photo-mechanical Unit was refitted with new equipment to handle the demand for contact prints ordered through the Air Photo Library. Special services continued for mapping programs carried out by the Surveys and Mapping Branch and other government departments. Some 37,297 air photos and map related products were produced, a 20% increase over 1985-86.

The Remote Sensing Centre completed 16 projects varying in size and complexity from mapping extensive hydro transmission line corridors to identifying gopher habitat in the agricultural regions.

Close liaison was maintained with the Canada Centre for Remote Sensing for identifying applications, new developments and future programs to enhance the use of remote sensing technology in Manitoba.

Water Resources

The Water Resources Branch provides short and long-term planning for the management and development of water resources in Manitoba; plans and develops construction and maintenance programs for provincial water control works; conducts studies and investigations related to the management and use of the water resources in the province; and provides engineering services to municipal councils and conservation district boards.

Water Management Services

Water Licensing and Approvals

The new Water Rights Act came into force on December 1, 1986. The intent of the new Act is to ensure the best use of water available to the province and the protection of water supplies for future generations. It provides more authority for the Minister to remove unauthorized works that interfere with the flow of water, and introduced a licensing system for drainage works.

The construction of Manitoba Hydro's Limestone Generation Station continued in 1986. Approximately 180 thousand cubic metres of concrete (33% of total requirement) were placed. Contracts were let for intake gates, guides and hoists, and for spillway gates, guides and hoists.

The final licence for the development of water power at the Missi Falls Site on the Churchill River was issued to Manitoba Hydro on February 5, 1987. The Missi Falls Generating Station was constructed in conjunction with the Missi Falls Control Structure for the Churchill River Diversion. The power generated at the station operates the control structure gates and provides electrical power for other requirements in the area.

Approvals

Waterway Opening Investigations	677
Crown Land Use Investigations	456

Hydroelectric Power Generation

	1985	1986
Water Power Rentals (Rates were increased on July 11/86)	$16,193,828.60	$31,588,027.50
Land Rentals	473,082.38	473,082.38
Total	16,666,910.98	32,061,109.88
Total Power Production (kilowatt-hours) Associated with the above charges	22,498,838,500	23,925,281,540

Water Supply for Existing Power Developments

River	Average Flow	Percent of Long-Term Avg.
Winnipeg River (Slave Falls)	1053 m^3/s	124.6%
Nelson River (Kelsey)	2612 m^3/s	114.4%
Saskatchewan River (Grand Rapids)	576 m^3/s	87.7%

Water Supply for Existing Power Developments

Lake	Approved Range	Levels		Outflows	
		Low	High	Low	High
Lake of the Woods	321.9 m to 323.5 m	March 322.46 m	July 323.19 m	Sept 295 m^3/s	June 1040 m^3/s
Lake Seul*	353.0 m to 357.2 m	April 355.25 m	Aug. 356.75 m	Apr. 137 m^3/s	Jan. 454 m^3/s

** The flow into Lac Seul through the Lake St. Joseph Diversion averaged 76.4 m^3/s in 1986.*

Requests for Use of Crown Land, 1986-87

Nature of Requests	Requests	Parcels Involved
Lands within Water Power Reserves	92	121
Lands within the Operation of Water Power Licences	29	31
Crown Land Outside of Water Power Reserves/Licences	202	304
Total	323	456

Water Power Development to December 31, 1986

Owner	River	Plant Name	Normal Head in Metres	Installed Capacity in Megawatts	
				Present	Ultimate
City of Winnipeg	Winnipeg	Pointe du Bois	14.02	78.33	78.33
City of Winnipeg	Winnipeg	Slave Falls	9.14	71.62	71.62
Manitoba Hydro	Winnipeg	Seven Sisters	18.59	149.20	149.20
Manitoba Hydro	Winnipeg	Great Falls	17.07	125.33	125.33
Manitoba Hydro	Winnipeg	Pine Falls	11.28	85.05	85.05
Manitoba Hydro	Winnipeg	McArthur	7.01	59.68	59.68
Manitoba Hydro	Laurie	No. 1 Site	16.76	5.22	5.22
Manitoba Hydro	Laurie	No. 2 Site	16.76	5.22	5.22
Manitoba Hydro	Nelson	Jenpeg	7.32	167.10	167.10
Manitoba Hydro	Nelson	Kelsey	15.24	219.32	313.32
Manitoba Hydro	Nelson	Kettle	30.02	1,253.28	1,253.28
Manitoba Hydro	Nelson	Long Spruce	24.38	1,007.10	1,007.10
Manitoba Hydro	Saskatchewan	Grand Rapids	38.10	447.60	447.60
Total				3,674.05	3,768.06

Activities in Administering The Water Rights Act, 1986-87

	Surface Water	Ground Water
Applications	80	68
Complaint Investigations	12	3
Site Visits	93	154
Licences Issued:		
Domestic (including stock watering)	3	0
Municipal	1	8
Industrial (including mining operations)	4	2
Irrigation (including wild rice production)	22	17
Air Cooling and Heating	0	4
Recreation	0	2
Water Conservation	1	0
Flood Control	5	
Fish Raising	0	2

Special Services

A Fisheries Assessment field study was developed in co-operation with the Fisheries Branch in order to determine the environmental impacts of the proposed Washow Bay Project.

Water Supply Projects

During the past year, under the Interim Subsidiary Agreement on Water Development, two projects were completed by the province in conjunction with the Prairie Farm Rehabilitation Administration (PFRA).

Assiniboine-La Salle River Enhancement Project
The project was completed and operated through the 1986-87 winter. The major components of the project were three pumping stations that divert water into the La Salle River, Elm River and Mill Creek.

Altona Water Supply Project
The Altona Water Supply Project, which began in September, 1984, was completed. The project involved the construction of a 22 km water pipeline from Letellier to Altona, a treatment plant in Letellier and a water supply intake from the Red River to the treatment plant.

The water treatment plant in Letellier and both pipelines were completed by November, 1986.

Water Conservation and Development

Reservoir Regulation
All major reservoirs were replenished by the 1986 spring runoff. The manually or mechanically controlled dams were operated to maintain reservoir levels within their normal ranges. Lake Manitoba remained within the permissible regulated range of 247.15 m to 247.76 m. Dauphin lake peaked at 261.33 m following the spring runoff and receded gradually to near the upper limit of 260.168 by December. Lake of the Prairies was drawn down to 423.92 m prior to spring runoff and peaked at 428.16 m.

Oak and Plum Lakes
The Oak and Plum Lakes wetlands complex, situated in the southwestern corner of the province, has been the subject of conflicting interests for the past few decades. One of the main difficulties encountered in trying to solve the conflicts between agricultural and wildlife initerests has been the complex topography and hydrology of the numerous marshes known as Plum Lakes. A survey of this area was initiated and neared completion at the end of the fiscal year. A study identifying management alternatives for the Oak and Plum Lakes area is expected to be completed in 1988.

Rat River Wetland Development
Together with several other organizations, a study was undertaken to investigate the feasibility of a wetland development project in the Rat River Wildlife Management Area in southeastern Manitoba. The study team explored wetland development options that would enhance the area for wildlife and solve a long-term flooding problem along the Rat River. It was anticipated that the study will be completed in 1987.

Moose Lake — Cormorant Lake
Abnormally high water levels have been experienced on North Moose Lake and Cormorant Lake since the early 1960's. Above normal runoff since 1983 has worsened the situation and it would cost and estimated $2 million to alleviate the problem through provision of a pumping system. However, it is possible to improve the situation somewhat through improvements in the operation of the Moose Lake Narrows Control Structure.

Grace Lake Regulation
Grace Lake, located immediately east of The Pas, is regulated by a control structure in a dyke which extends along two sides of the lake. Seepage through the dyke has created problems for adjacent landowners. A preliminary study was completed that identified measures to control the seepage or reduce its impact on adjacent land. The study recommended a phased approach, starting with the adoption of a lower range of regulation. This range will be used on a trial basis over the next summer to determine its effectiveness. If successful it may not be necessary to construct a new outlet for the lake.

Bellsite
Local farmers suffering excessive crop losses in the Bellsite-Novra area have requested improved drainage. A study of the existing drainage system was undertaken to assess the problems, identify the specific need for additional drainage and to develop a systematic plan for any recommended reconstruction based on land use, soil capability, and economic considerations. The study report was expected to be completed in the summer of 1987.

Portia Complex
The Portia wildlife management project, comprising an area of about 10,000 hectares in the Alonsa Conservation District, was planned for development in two phases by Ducks Unlimited. At the request of the Conservation Districts Authority, a preliminary study was initiated to identify surface and groundwater resources, water management problems and costs of proposed water management works exclusive of the wildlife project, in addition to a general water management strategy including agricultural development opportunities in the Alonsa Conservation District resulting from the project. The study, completed in the summer of 1986, concluded that the wildlife management project could be modified slightly to increase local agricultural benefits.

Whiteshell Lakes — Improved Regulation
In the past, outflows from several lakes in the Whiteshell River system have frequently been inadequate to allow effective fish spawning during the spring runoff period. A study was initiated in January, 1987 to improve the regulation of these lakes to enhance fish spawning. A preliminary operating plan was prepared in March, 1987 for regulating Jessica Lake and White Lake during April and May of 1987. The plan was designed to provide suitable flows and gradual changes in flows on the Whiteshell River while maintaining the lakes within acceptable ranges.

Navin Drain
Landowner concerns regarding the level of drainage service along the Navin Drain prompted an investigation of the associated drainage system located southeast of Winnipeg and west of the Red River Floodway. Studies were undertaken in 1986 to develop a drainage plan and to determine an appropriate drainage design standard. The study report was expected to be completed in the summer of 1987.

Garland River Area Agricultural Flood Control
Landowners along the Garland River and Wellburns Creek in the R.M. of Ethelbert, R.M. of Mossey River, and the L.G.D. of Mountain have experienced a long history of flooding and erosion problems related to excessive spring runoff or severe summer rainstorms. A preliminary study was completed in 1986 that evaluated the damages associated with flooding in this area.

The study found that local interests favoured government action to solve the problems affecting both the Garland River area and the Wellburns Creek area by constructing a controlled diversion from the Garland River to Lake Winnipegosis.

Whitemouth River
As a result of flooding problems along the Whitemouth River, the L.G.D. of Reynolds requested an investigation into the feasibility of installing a control structure in the headwaters of the watershed. The headwater storage option, in addition to several other flood control schemes, was being considered. The study was expected to be completed in the summer of 1987.

Overhill Drain
An investigation into the feasibility of upgrading the Overhill drain was undertaken to improve the ability of local landowners to meet target dates for spring seeding. The study proposed a low-scale drainage system designed to remove spring runoff without over-draining the sensitive Almasippi Sand soils of the Overhill area. The total estimated cost of the project was $2 million. The drainage system plan incorporated several low-cost features in keeping with the anticipated economic returns.

Patterson Dam Re-evaluation
The construction of the proposed Patterson Dam was recommended in the 1978 report of the Souris River Basin Study Board. The proposed reservoir would be situated on Gainsborough Creek approximately three kilometres upstream of its confluence with the Souris River. It was designed for a storage capacity of 20,600 dam^3.

PFRA re-evaluated the firm annual yield of the reservoir and determined that the actual yield would be 40% of the originally estimated yield. Project benefits would, therefore, be reduced from $4.8 to $3.6 million, while the estimated project costs remained $5.0 million. A recent environmental assessment of the project resulted in findings similar to the original environmental assessment completed as part of the 1978 Souris River Basin Study.

Roseau River
The objectives of the International Roseau River Study (completed in 1975) were to determine the impact of a proposed flood control project in Minnesota and to develop a basin-wide plan for the Roseau River and its tributaries. In Manitoba, the following protective works were identified: Roseau River channel enlargement, Roseau-Red River diversion, Gardenton Floodway rehabilitation, extension of bridges and Dominion City water treatment plant modification. Other concerns identified included increased erosion and the environmental impact.

Modifications to the project were subsequently presented by the U.S. Army Corps of Engineers, but it was concluded that the current project remained essentially the same as the project reviewed by the International Joint Commission in 1975.

The Corps was advised that Manitoba would have to undertake a full environmental impact assessment (EIA) of the project and mitigation works in Manitoba prior to any work being initiated in the United States. The Manitoba Environmental Assessment and Review Agency has developed guidelines for the preparation of an EIA. The Corps was in the process of negotiating with Manitoba to carry out the EIA and design of mitigating works in Manitoba.

Aux Marais Drainage System
A study was underway to determine the economic feasibility of drainage improvements to the portion of the Aux Marais drainage system that lies in Manitoba. The study involved assessing the current capacity of the system, cataloging the soils, evaluating land use and land capability, providing preliminary design and cost estimates for the necessary drains , and determination of the benefits of the drainage improvements.

Manitoba Escarpment Storage Study
Together with PFRA and Manitoba Agriculture, a study was undertaken to identify the potential benefits and costs of developing headwater storage along the Manitoba Escarpment from the Porcupine Hills to the Pembina Hills.

From a preliminary assessment, it does not appear that the proposed headwater storage dams will have any significant effects on fisheries, forestry or recreation. Some concerns have been expressed regarding potential impacts on wildlife habitat. It is expected that the first phase of the study will be completed in mid-1987. If the results of the first study are favourable, a more detailed examination of specific storage sites will take place.

Pipestone Creek
Flows on Pipestone Creek are regulated by the Moosomin Dam in Saskatchewan. Due to high channel losses and a large number of natural channel blockages, water flows downstream from the dam have often been inadequate. A task force was established to arrive at an agreement regarding operation of the dam which would meet Manitoba's requirements and be acceptable to Saskatchewan.

Rural Municipalities of Shellmouth and Russell Interprovincial Drainage Problems
Agricultural drainage activities in several watersheds in the Saskatchewan rural municipalities of Langenburg and Churchbridge have resulted in increased flows downstream. The rural municipalities of Russell and Shellmouth in Manitoba have been particularly affected. In 1980, the Prairie Provinces Water Board initiated a study to identify the impacts and determine an equitable basis for cost sharing remedial works. In 1986 Manitoba completed a study identifying the approximate costs of works necessary to convey the additional flows.

Southwest Regional Water Development Study
In co-operation with PFRA, a comprehensive study of the water development opportunities and options for meeting increased demands in the southwestern portion of Manitoba was undertaken. Present and future water demands in the study area, as well as an assessment of the need for water retention facilities were determined as part of this study.

Canada-Manitoba Subsidiary Assessment on Value Added Crops Production
This federal-provincial agreement, signed on April 1, 1979, provided for the construction of several large projects, and a wide variety of demonstrations and investigations. The objectives were to increase the production of value-added crops and to improve the production of forage crops in order to maximize their feed value. Although the agreement expired on March 31, 1986, work continued on Cooks Creek, a major drainage system reconstruction project initiated under the agreement. It was currently being completed by Manitoba and the Cooks Creek Conservation District.

Canada-Manitoba Interim Subsidiary Agreement on Water Development
Drought Proofing Studies
The Department of Agricultural Economics of the University of Manitoba has developed a series of mathematical models which have been used to simulate Manitoba's agricultural economy with and without the imposition of drought conditions. A series of scenarios consisting of potential drought proofing measures were tested and assessed using the mathematical models. Among these scenarios was the adoption of farming practices which could lead to improved soil moisture conditions through the greater retention and conservation of snow cover to facilitiate the production of winter wheat, the subsidization of forage transport, the establishment of feed banks and the establishment of large scale irrigation projects. The results of this work were being used to formulate a long-term drought proofing strategy for Manitoba.

Water Management Investigations

Investigations were undertaken to determine the economic feasibility of diverting water from the Assiniboine River to the Assiniboine South-Hespeler area for irrigation and other purposes. The report on these investigations was nearing completion. Activities have included the economic evaluation of the project, an assessment of the impacts of the project on the environment, and studies into the costs of the principal engineering works.

Canada-Manitoba Subsidiary Agreement on Agri-Food Development

Pasquia Polder III Project

The Pasquia Polder III Project was being developed jointly by Manitoba Natural Reosurces and PFRA. The project will cost approximately $5 million, involving the construction of two large pumping stations and some 60 kilometres of drains. The project would result in the development of about 95 square kilometres of land for agricultural purposes. The project has been delayed pending the resolution of the concerns about environmental impact brought to the attention of the federal government by The Pas Indian Band.

Washow Bay Watershed Agricultural Enhancement Project

In recent years farmlands in the Washow Bay area have experienced serious agricultural crop damage due to flooding or excess soil moisture resulting from summer rainstorms. A drainage improvement study recommended a major drainage project costing between $5 million and $6 million. A funding and implementation schedule for the project was being developed.

North Duck River

A headwater storage project was evaluated that would complement on-farm soil and water management activities in the North Duck River area. A headwater storage dam has been proposed to reduce the severity and frequency of flooding along the lower reaches of the North Duck River. A detailed design study was initiated to confirm the technical feasibility, to optimize design features, and to provide a detailed cost estimate of the proposed dam.

Flood Damage Reduction

Canada-Manitoba Flood Damage Reduction Program

Designation of the flood risk areas in Arborg, Riverton and Fisher Branch were approved by Manitoba. However, no designations occurred during 1986-87 because of delays in obtaining federal concurrence.

Negotiations continued with the Town of Morden on its proposal to restrict development in flood prone areas by amending its development plan and by-law. Although several meetings were held with the town, no concrete proposals were forthcoming.

Base map preparation continued for The Pas, Virden and parts of Winnipeg. Hydraulic studies for Morden, Riverton, Fisher Branch and Neepawa were completed, and a study was initiated to identify the flood risk areas of Omands Creek within the City of Winnipeg. A proposal to revise the floodway and floodway fringe areas (between Kilkenny Drive and the Red River from the South Perimeter Highway to Radcliff Road) was also made by Manitoba.

Manitoba Flood Protection Projects Agreement

This agreement was to terminate on March 31, 1985. However, on May 22, 1985 the agreement was extended to March 31, 1989 and involved additional funding of $1.6 million. This funding was intended for flood protection works near Ste. Rose du Lac and at the Souris Water Treatment Plant.

The majority of the required works have been completed at Letellier, St. Jean Baptiste, Morris, Rosenort and Brunkild. During 1986-87 the west Emerson dyke and the West Lynne dykes (excluding the north closure dyke) were completed. At Letellier, St. Jean Baptiste and Rosenort, the dykes were graded and seeded and the pumping stations were upgraded. At Morris the central storage supply and communications building was completed and the standby pumps were purchased. Negotiations for land acquisition were initiated at Ste. Rose du Lac and design of a dyke to protect the Souris Water Treatment Plant was started.

Provincial Flood Damage Reduction

During the spring of 1986, the Red River Floodway, the Portage Diversion and the Shellmouth Dam were operated to reduce flooding along the Assiniboine and Red Rivers.

After the 1979 Flood, the Red River Valley from Emerson to Winnipeg was designated as a flood area under The Water Resources Administration Act. Sixty-one permits to build or erect a structure in this area were processed during 1986-87. (Manitoba Regulation 1979/79 requires a person wishing to build or erect a structure in the Red River Valley to first obtain a permit from the Water Resources Branch).

Under Section 494.09 of the City of Winnipeg Act, the Minister of Natural Resources may make an order varying the floodproofing criteria established by Manitoba Regulation 9/85. Eight applications for variances were processed during the 1986-87 year.

The province approved a diversion around the Town of Gimli based on a combined project consisting of land drainage and flood protection. Manitoba will be responsible for all costs associated with agricultural drainage and 90% of the flood protection costs. The Town and R.M. of Gimli have signed an agreement to contribute 10% of the flood protection costs and be responsible for mowing of the grass along the diversion. Final design of the project was initiated during 1986-87.

Hydrotechnical Services

Hydrology

Hydrologic Monitoring
Water level data was gathered at 125 hydrometric stations throughout Manitoba to assist in the operation of water control structures. A further 320 flow, level and sediment stations were operated by the federal Water Resources Branch under the terms of the Canada-Manitoba Agreement for Water Quantity Surveys. All recorded data was entered into the branch's computer for use in hydrologic studies.

Data on water levels and streamflows for 30 lakes, 29 rivers and seven reservoirs was compiled and distributed weekly to several hundred users.

Isohyetal maps of storm precipitation and monthly precipitation were prepared and distributed after each significant storm, and at the end of each month.

Hydrologic Studies
Climatological and hydrological studies and data were provided at the request of clients. They included studies of the hydrology of the Washow Bay drainage system and the impacts of land drainage in eastern Saskatchewan on flows in the upper Assiniboine River.

Flow Forecasting
The River Flow Forecast Centre prepared daily flood information sheets containing water levels and river flow forecasts for various watersheds in Manitoba during the 1986 spring runoff period.

Special streamflow and water level forecasts were also prepared following a major rainstorm in the Saskatchewan River watershed in July.

Throughout the year, inflow forecasts were prepared for various lakes and reservoirs where control structures were operated by the province.

During February and March, 1987, spring flood outlooks were prepared for the Red River, the Assiniboine River, the Souris River and for 51 smaller watersheds and eight lakes and reservoirs in Manitoba. They were distributed to all municipalities, local government districts, towns, villages, cities and Indian bands in Manitoba, as well as to flood fighters and government officials.

Canada-Manitoba Flood Forecasting Agreement
This agreement was signed on March 31, 1981 to assist the Manitoba River Flow Forecasting Centre in updating and improving forecasting procedures, with an expiry date of March 31, 1986. The two governments agreed to extend this agreement to September 30, 1989 at a total additional cost of $400,000.

Hydrogeology

The Hydrogeology Section participated in a number of new initiatives during the year. These included the restoration of an improperly constructed water supply well in the Rural Municipality of Springfield to eliminate saltwater intrusion into a freshwater zone, the preparation of a policy for licensing the use of groundwater from the carbonate aquifer in the Winnipeg area, and the development of a by-law for the Town of Roblin to prevent damage to the town's groundwater supply from abandoned wells.

Aquifer Data

Water well drillers submitted some 2,600 reports during 1986-87. In addition, 460 groundwater monitoring stations were in operation from which data on water levels and water quality were obtained. All groundwater data was incorporated into a permanent storage and retrieval system for the province.

One hundred and fourteen groundwater availability appraisals and 30 groundwater pollution appraisals were prepared in response to specific requests. Numerous telephone inquiries about groundwater conditions in various areas were responded to with specific resource information and advice. Groundwater resource reports and development plans were prepared for two planning districts. The first annual report on Manitoba groundwater statistics and available information was completed.

Aquifer Definition

Regional hydrogeology studies included the preparation of final maps for the Dauphin Lake map sheet and preparation of preliminary maps to update the Neepawa map sheet. Regional water sampling was also carried out within the Neepawa map sheet area. Work continued on a study of the carbonate aquifer in southern Manitoba including regional fracture mapping, computerization of groundwater geochemical data and interpretation of stable isotope information. Borehole geophysical logging of approximately 40 holes was carried out, including seven holes at the Conawapa dam site for Manitoba Hydro.

Aquifer Capacity

A report was completed on the extensive investigations undertaken under the Canada-Manitoba Interim Subsidiary Agreement on Water Development. Using information contained in the report, hydrogeologic modelling of the Assiniboine Delta Aquifer was commenced.

Other aquifer capacity activities involved completing a report on the water supply capacity of the Winkler Aquifer, evaluating groundwater capacity and quality conditions in the Selkirk area and evaluating groundwater quantitative, chemical and thermal usage situations in the Winnipeg area.

Aquifer Modification

Field investigations involving surveys, geophysics and test drilling were carried out in the Rural Municipality of Brokenhead near Ladywood to determine whether aquifer modification could solve longstanding seepage and drainage problems. A solution to this problem was proposed to the municipality.

Extrememly high groundwater levels resulted in operational problems on the Ross Creek Drain aquifer modification project. Discharge from a spring that had previously ceased to flow resulted in considerable inconvenience to a number of farmers. Groundwater discharge in the form of a blowout occurred on the Ross Creek Drain berm.

Modifications to water supply wells for the Oak Hammock Marsh were completed after the construction of a new water supply channel. In addition, a device was installed to measure groundwater discharge at one of the water supply locations and the observation well network in the Marsh was put back into operation.

Periodic inspections were carried out on the South Lateral Drain aquifer modification project to determine the extent of icing problems. Alternate plans for disposal of the relief well water were formulated.

Proposals to determine the feasibility of aquifer modification in certain areas of the Devils Creek Watershed and the Squirrel Creek Watershed were also developed.

Summary of Water Control Works, 1986-87

Program	Region					Total
	Interlake	Eastern/ Northeastern	South Eastern	South Western	Western/ Northwestern	
Maintenance of						
— Water Supply and Conservation Facilities	$ 12,221.16	$ 9,984.44	$ 37,058.49	$23,554.21	$ 155,304.89	$ 238,123.19
— Flood Damage Reduction	199,137.17	138,019.33	88,761.37	—	3,595.98	429,513.85
— Land Drainage	913,229.97	207,448.67	1,179,288.81	34,059.77	681,265.06	3,015,292.27
Removal of Excess Rainfall From Agricultural Land	148,549.34	154,898.35	240,631.03	—	89,595.51	633,674.23
Bridge Replacement Program	168,982.13	78,312.75	177,269.60	—	52,642.37	477,206.85
Cooks Creek Agricultural Productivity Enhancement	—	358,682.43	—	—	—	358,682.43
Land Settlement Payment on Pasquia	—	—	—	—	225,000.00	225,000.00
Canada/Manitoba Agri-Food Agreement	—	—	624,632.85	—	286,669.92	286,669.92
Upgrading Town Dykes	—	—	—	—	12,717.18	637,350.03
Escarpment Agricultural Flood and Erosion Control	—	—	31,007.73	—	83,968.91	83,968.91
Water Development Agreement	—	—	404,848.00	—	—	31,007.73
Reconstruction of CP Rail Bridge Over Hespeler Floodway	—	—	633,369.63	—	—	404,848.00
Reconstruction of CN Rail Bridge Over Seine River Diversion	—	—	—	—	—	633,369.63
Total	$1,442,119.77	$947,345.97	$3,416,867.51	$57,613.98	$1,590,759.81	$7,454,707.04

Wildlife

This branch develops and implements management programs to ensure the wildlife resource is passed on in at least as vigorous a state as it was received by the present generation; delivers programs that provide for the subsistence, commercial and recreational use of the wildlife resource; implements programs to alleviate wildlife damage to people and property; and promotes the use of wildlife for scientific and educational purposes.

Wildlife Management Programs

Wildlife Education

National Wildlife Week continued to draw public attention to the value of wildlife for a seven day period in early April. Based on the 1986 theme, "Help Wildlife in Jeopardy" Manitoba's ten-agency working group organized a poster and prose contest for students in grades three to eight. The contest attracted 1,200 entries. The working group also produced a doodle poster and peregrine falcon colouring page, and distributed educational booklets to Manitoba teachers. Pacific Western Airlines sponsored the 1986 contest and provided the winners with free round trip passes to Churchill. Wildlife displays involving some 20 wildlife groups were set up in Brandon, Dauphin, Portage la Prairie and Winnipeg, reaching an estimated 150,000 people. The plight of Canada's rare and endangered wildlife was covered in a variety of ways by media outlets. In 1986, the Canadian Wildlife Federation presented the prestigious Doug Clark Memorial Award to Manitoba's Working Group for its accomplishments in the field of conservation education. This was the first time the award recognized a National Wildlife Week working group.

Project Wild was formally introduced to Manitoba's school system in April, 1986. Sponsored by the Canadian Wildlife Federation, Project Wild was intended to be delivered by participating members (four provincial wildlife branches as of April, 1986) for the purpose of bringing a wildlife and conservation message to educators and their students. It has also been used by leaders of youth groups involved in environmental education programs (4-H, Girl Guides, etc.). Project Wild manuals were distributed to educators who voluntarily completed a workshop conducted and coordinated by Wildlife Branch staff. In its first year of operation, Branch staff conducted four workshops and ran ten orientation presentations. (Project Wild originated in the Western United States in 1981 through a joint effort of the Western Regional Environmental Education Council and the Western Association of Fish and Wildlife Agencies.)

The distinctive character of Wildlife Management Areas continued to appeal to growing numbers of Manitobans and tourists. Oak Hammock Marsh showed the greatest upsurge in activity with visitor use increasing from 55,000 in 1985 to 65,000 in 1986. Seasonal naturalists continued to tour school and special interest groups through the area, spring and fall. They also promoted marshlands through shopping mall exhibits during the summer months. Approximately 7,000 people were contacted through mall displays and 4,000 were taken on tours of the marsh. Branch staff kept area residents apprised of marsh programs and developments through a newsletter published twice a year. Resident interest in area programs remained high with farmers participating on the Oak Hammock Marsh Working Group. In 1986, residents organized a community picnic and dance in conjunction with branch staff and Ducks Unlimited. Fashioned after picnics held in the area 100 years ago, Oak Hammock Day was expected to become an annual event.

At the Narcisse Wildlife Management Area, approximately 5,000 people visited the world renowned snake dens. A seasonal naturalist took school groups on guided tours of the area and answered public inquiries.

New wildlife brochures produced in 1986-87 included "A Guide to Oak Hammock Marsh", "Snakes of Narcisse", "Manitoba's Habitat Heritage Corporation" and "Ribbons of Habitat". Assistance was also provided to Ducks Unlimited, the Canadian Wildlife Service and Manitoba Agriculture to produce junior and senior sets of wildlife conservation manuals for the 4-H program. A 12 minute film that dealt with ways to avoid a confrontation with a polar bear was completed as well. The 16 mm film was targeted at Churchill youth.

Displays were set up and staffed for various functions throughout the year. At the 1986 Winnipeg Sportsmen's Show, an estimated 4,000 people were contacted. At that show the department co-sponsored with the Manitoba Wildlife Federation the first annual Prairie Canada Decoy Carving Competition. A "bird fair" exhibit that involved five advocate wildlife groups was also co-ordinated by the department. The value of Manitoba's wild fur industry was conveyed to some 13,000 people who visited Whittier Park during Festival du Voyageur. Sponsored by the Manitoba Registered Trappers Association and the department, the program featured experienced trappers in a trapper's cabin outfitted with humane trap sets and raw furs. In recent years this program has been delivered in schools as well, reaching an estimated 15,000 students annually. Wild fur and wildlife management exhibits were also provided at The Pas 1987 Trappers' Festival, where an estimated 4,000 people were contacted during the four day event.

The Minister of Natural Resources presented wildlife awards to 14 Manitobans in recognition of their commitment and dedicated service in the field of wildlife management. The four-award category program recognized Manitoba residents, non-residents, conservation organizations and corporations who have con-

tributed to the well-being of the province's wildlife resource.

Seminars on the management, ecology and biology of moose continued to be organized for the public. Although these seminars were highly successful, they drew heavily upon staff time and as a consequence were reduced to 4 hours from 12 hours. Seminars were also provided for senior citizens taking part in the Hecla Island moose hunt.

Throughout the year, staff spoke to numerous wildlife associations, naturalists groups, business organizations, service clubs, students and organized youth groups such as 4-H, Girl Guides and Boy Scouts on various aspects of wildlife conservation.

Recreational Hunting

Recreational hunting remained popular in 1986-87. Some 51,000 big game hunters harvested 1,750 moose, 21,180 deer, 732 elk, 900 black bears, 40 woodland caribou and 20 timber wolves. In that same year 32,580 resident and 6,060 non-resident game bird hunters took to fields and marshes.

Goose hunting continued to be excellent throughout much of southern Manitoba. In the Oak Hammock Marsh Managed Hunting Area alone 3,000 hunters shot 17,000 geese, an all time high (13,000 Canadas and 4,000 snow geese).

For the second consecutive year, prizes were offered to big game hunters who turned in elk or moose jaws to the department for age determination. In 1986, 80% of the successful licenced hunters submitted a jaw on the chance of winning a prize. This incentive has more than doubled the numbers of hunters who participated in the jaw collection program. Belt buckles were also provided to hunters who submitted female moose and elk reproductive tracts to the department for analysis.

Co-operative Wildlife Management Programs

The Beverly-Kaminuriak Caribou Management Board approved a joint caribou management plan and reviewed it at a special meeting in Eskimo Point in August, 1986. The plan was amended based on user group and public comments, and was scheduled to be released and discussed later in 1987.

The Skownan Moose Management Board was established and began functioning reasonably well. At the request of native people, the board was attempting to increase the moose population in the Waterhen area by reducing hunting in the area. Hunting activity by Treaty Indians in this area was substantially reduced and the moose population reached a level where it has the potential to expand rapidly if protected.

In November, 1986 the department signed a Moose Management Agreement for Game Hunting Area 8 with The Pas Indian Band, the Moose Lake Indian Band, the Easterville Indian Band, The Pas Area Wildlife Association, the Cormorant Community Council and the Moose Lake Community Council. This agreement, renewed for the second time, has suspended moose hunting in Game Hunting Area 8 for a three year period.

A Co-operative Elk Management Board was established in 1986 to review issues relative to elk management in the Duck Mountain area. The board consisted of representatives from area Indian bands, Metis groups, the Chamber of Commerce, rural municipalities and Manitoba Natural Resources.

Wildlife refuges that extend 300 meters on either side of a road were established in several key areas throughout the province to prohibit opportunistic shooting of elk and moose. One such refuge, the George Barker Wildlife Refuge, was dedicated in 1986 to the memory of Chief George Barker, a well respected former chief of the Hollow Water Indian Band. Approximately 100 people attended the dedication ceremony that saw the Minister of Natural Resources unveil a monument to Chief George Barker.

Polar Bear Control Program

Under the revised Polar Bear Control Program staff continued to capture bears that entered Churchill and its refuse site. They also continued to ship habitual problem bears to zoos. Twenty-six bears were captured in 1986; five were shipped to zoos in Taiwan, Europe and the U.S.A.; 20 were moved to the bear holding facility for release once ice formed on Hudson Bay; and one had to be destroyed. Churchill residents shot five problem bears in remote areas in self defense. In a questionnaire mailed to Churchill residents, 90% of the respondents approved of the department's new control program.

Winnipeg Deer Herd Relocation Program

The Winnipeg deer herd, cherished by many city residents, continued to expand. Unfortunately, habitat loss coupled with damage caused by deer to residential vegetation, deer-auto collisions and hazardous airport situations crystallized the need to reduce the size of the rapidly growing herd. With the help of the St. Malo Wildlife Association, a total of 264 deer were live-trapped and relocated to southeastern Manitoba in 1985 and 1986. The long term goal was to maintain the city herd at 300 animals.

Urban Waterfowl Management

For the first year water levels were manipulated in the lower reaches of the Winnipeg floodway to provide suitable habitat for walleye fry and nesting ducks. The co-operative program involving Ducks Unlimited, Manitoba Agriculture, and Manitoba Natural Resources proved successful.

Commercial Management Programs

Amphibian and Reptile Harvesting

During a two-week snake picking season, 54,340 red-sided garter snakes were captured live and sold to biological supply houses in the United States. A two-month leopard frog season result in the sale of 16,190 kilograms of leopard frogs.

Wild Fur Management

Manitoba trappers harvested $7.0 million worth of wild fur in 1986-87 for an increase of $2.0 million over 1986. This increase was attributed to improved fur prices and a higher take of furbearers - especially beaver, coyote, fox and marten.

Trapper education staff conducted 17 fur schools involving 600 trappers. Trapline officers completed a comprehensive course in fur conservation, humane trapping and instructional techniques. Much of the training was used by trapline officers to conduct fur workshops in their communities.

Three youth trapper training programs were conducted at the Wallace Lake Experimental Trapline Facility. Each week-long program involved approxmately 20 native youths from registered trapline areas east of Lake Winnipeg and proved to be very successful. Twelve natural resource students from the Kelsey Institute in The Pas made use of the Tramping Lake facility.

Wood Bison Re-Establishment Program

In 1986, wood bison held in captivity near Waterhen produced 11 calves which, together with further additions from zoos, increased the herd size to 102 animals. Calves born on site were segregated in February for release in spring, 1988. Initiated in August, 1983, the project has cost $15 million to date, 90% of which has been funded by the Government of Canada through the Northern Development Agreement.

Elk Ranching

A review of the department's elk ranching policy led to the decision that big game ranching would not be permitted in Manitoba. The existing operation near Minitonas was scheduled to be phased out.

Wildlife Damage Control

The department helped prevent black bear damage to beehives by removing problem bears from the vicinity of bee yards. In 1986-87 bear damage compensation payments totalled $19,000. Forty grants of $100 each were made available to beekeepers who installed bear proof electric fences around bee yards.

Scaring devices and repellents were used to keep elk and deer away from farmers' crops. Winter intercept feeding was again used as an alternate food source to reduce deer and elk damage to crops or stored feed. Compensation payments for deer, elk and black bear damage to farm crops amounted to $258,000.

The wet fall of 1986, and the delay in harvest saw waterfowl damage prevention program costs reach $450,000. Program costs were shared equally between Manitoba and Canada.

The Canada-Manitoba Riding Mountain National Park Beaver Damage Control Program was undertaken again this year in accordance with the 5-Year Agreement. Under this agreement the department and Parks Canada remove problem beaver from lands adjacent to the park.

Habitat Management Programs

Wildlife Management Area Program

The 25th anniversary of Manitoba's Wildlife Management Area Program was celebrated in 1986. Activities commemorating this milestone included the placing of a cairn at Watson P. Davidson WMA (Manitoba's first Wildlife Management Area), the distribution of 25th anniversary posters and other specialty items.

During the year 89,000 hectares of Crown lands were proposed for WMA establishment. A Manitoba first was achieved with the signing of a joint forestry — wildlife memorandum of agreement outlining plans to develop, maintain and enhance the 79,000 hectare Moose Creek Provincial Forest/Wildlife Management Area in the northern Interlake.

Approximately $190,000 in grants-in-lieu of taxes were paid by the province on 45 southern WMA's in 49 rural municipalities and local government districts.

Development activities carried out during 1986 included the delineation of 53 kilometers of boundaries, placement of 33 features signs at 15 WMA's and posting of 150 boundary signs at three WMA's, as well as the improvement of access at three WMA's. Wildlife habitat enhancement projects involved planting 56

acres of forage plots at Watson P. Davidson and Pembina Valley WMA's, developing 70 hectares of nesting cover at Grants Lake and Oak Hammock Marsh WMA's, improving water control at Tom Lamb WMA and planting 57,750 trees in southwest Manitoba WMA's. Numerous information and extension activities were undertaken, inlcuding interpretive programs at Narcisse WMA and Oak Hammock marsh WMA, as well as erecting signs at Grants Lake WMA.

1986-87 Deer Habitat Program

The focus of the 1986 Deer Habitat Program was the acquisition of 320 acres of critical white-tailed deer habitat in southwest Manitoba. These lands consisted of 64 hectares of rolling aspen-oak woodland and native grasslands that will expand the Edrans Unit of the Whitemud Watershed WMA, as well as 64 hectares of woodland-slough complex that will be added to the Tiger Hills WMA.

Deer habitat enhancement activities included the development of 25 forage plots totalling 12 hectares at St. Malo WMA, Little Birch WMA and Birds Hill Provincial Park, construction of six watering holes in the Mars Hill area, and maintenance of 30 hectares of aspen regeneration plots on the east side of Duck Mountain. A fireguard was cleared around 607 hectares of mature wooded cover at Narcisse WMA to facilitate a prescribed burn.

Manitoba Habitat Heritage Program

The Manitoba Habitat Heritage Program was introduced in 1984 to combat the loss and deterioration of fish and wildlife habitat in Manitoba. The objectives of the program were to promote public awareness of habitat trends and to encourage support and participation in various projects to conserve, restore and enhance fish and wildlife habitat.

For the first two years the program was administered by Manitoba Natural Resources. With the proclamation of the Manitoba Habitat Heritage Act in 1986, this function was transfered to the newly established Habitat Heritage Corporation. It consisted of a 10 member Board of Directors. Under its terms of reference the Corporation may singly or in co-operation with other organizations, purchase or lease wildlife habitats and undertake projects designed to restore or enhance wildlife habitats and populations. Wildlife Branch staff provided professional/technical support to the Habitat Heritage Corporation.

Habitat Heritage projects in 1986-87 included the protection of 1551 acres of privately owned prairie and parkland habitat under 5-year habitat Protection Agreements with 11 landowners. In addition 260 hectares of valuable white-tailed deer habitat in southwestern Manitoba were purchased.

Habitat enhancement projects included the establishment of food plots in Alonsa, Narcisse and Lundar Wildlife Management Areas, as well as the Duck Mountain area. The construction and placement of nesting structures for Great Gray Owls, Ferruginous Hawks and Burrowing Owls was also undertaken by the Corporation.

Wildlife Habitat Canada Projects in Manitoba

Duck Mountain Elk Habitat
Agreement was reached among Manitoba, Wildlife Habitat Canada and the Manitoba Habitat Heritage Corporation for a 5-year elk habitat enhancement project in the Duck Mountain Provincial Park and Forest. Under the agreement, Wildlife Habitat Canada will provide 50% of the total $200,000 project cost with the balance equally divided between Manitoba and the Habitat Heritage Corporation. The project was to be initiated in 1987 and involved the use of prescribed burns on a 30 square kilometer area to re-establish some grasslands within the forest to enhance elk winter habitat and reduce depredation by elk on crops adjacent to Duck Mountain.

Habitat Enhancement Land Use Program (HELP)
HELP was designed as a holistic approach to land use management in western Manitoba's prairie pothole district. Research and development of this program continued in 1986-87. The program was intended to allow farmers to choose from a wide variety of options under HELP, including leasing native upland/wetland complexes, planting cover crops for wildlife habitat plus soil erosion and salinity control, wetland restoration, conservation tillage, rotational grazing, and intensive habitat management techniques. Wildlife Habitat Canada will supply 50% of the total costs ($1.5 million), Ducks Unlimited 25% ($0.75 million) and Manitoba 25% ($0.75 million). Further refinement of the landowner options, liaison with other agencies involved in similar initiatives, baseline habitat and waterfowl population monitoring, and negotiation on the agreement with Wildlife Habitat Canada and Ducks Unlimited occupied most of the year. Considerable progress was made in these areas with the program to be launched early in 1987-88.

Land Use Allocation

The Wildlife Branch prepared, reviewed and provided recommendations to nine planning districts relative to wildlife concerns and subsequent private land use zoning.

Input was also provided to Crown land use planning through the Crown Land Classification Committee and regional representation on the Bloc Planning Committees.

Over 200 Crown land use requests were reviewed and responded to as required. Several meetings and subsequent assessment work have occurred relative to the Manitoba Potash Project to ensure wildlife concerns were identified and adequately dealt with in the initial evaluation process.

Wetland Management Program

Land Use Task Forces charged with developing multi-discipline resource plans have been established for the Rat River, Plum Lakes and the Lake Francis portion of Delta Marsh.

Three Ducks Unlimited projects involving 2,170 hectares of Crown land were reviewed and approved by the Wildlife Branch. This included the 2,530 ha Vestfold project north of the Shoal Lakes in the Interlake Region. This project involved 24 private land parcels as well as Crown lands. Both the Saskeram and Summerberry Management Committees continued their active roles in the Saskatchewan River Delta as Ducks Unlimited projects were being considered in the Reader-Root Lakes of the Saskeram W.M.A. and in Tom Lamb W.M.A.

A water management committee was formed to annually review the management of water in the Oak Hammock W.M.A. The Wavey Creek diversion was operated during its first year and secured an adequate water supply. All four impoundments were filled in 1986 for the first time in several years. Water manipulations provided excellent habitat for marsh wildlife.

Wildlife Habitat Canada was added as a participant to the Manitoba Heritage Marsh Agreement in February, 1987. An additional 10 candidate marshes were being considered for heritage marsh designation.

Habitat Inventory

An inventory of loss of deer habitat in southern Manitoba was continued in 1986-87. Sixteen study sites of four townships (374 km^2) have been selected and will be inventoried every five years using LANDSAT satellite data to monitor changes and identify long term trends. Seven sites were analyzed using 1981 and 1986 data. Average annual losses ranged from 0% to 7% with a mean of 3.0%

A co-operative project was undertaken with the Manitoba Remote Sensing Centre to assess the new LANDSAT Thematic Mapper Satellite data for its potential application to monitoring waterfowl habitat.

A general habitat cover map was produced for the 1.85 million hectare Cape Churchill W.M.A. at a scale of 1:250,000. This was the first habitat map of the region and was produced through visual interpretation of LANDSAT satellite paper prints and cartographic reproduction.

Implementation Strategy for the North American Waterfowl Management Plan

Provincial and federal wildlife and agriculture agencies, and several non-government wildlife agencies, co-operatively developed a strategy for the implementation of the North American Waterfowl Management Plan (NAWMP). This plan, if implemented, would protect and improve waterfowl breeding habitat within southern Manitoba. The plan identified a variety of programs and implementation strategies to achieve mallard population objectives for southern Manitoba. Some of these programs include the promotion of waterfowl compatible farming techniques that also contribute to soil and water conservation as well as direct habitat enhancement initiatives. The NAWMP calls for total expenditures of $1.5 billion continent wide, of which $1.0 billion would be directed at the Canadian prairie pothole region.

Biological Services

Canada Goose Studies

The long-term study of the Eastern Prairie Population (EPP) of Canada geese at the Cape Churchill camp continued in 1986. Breeding populations were approximately 12% larger than in 1985, and the nesting success was also higher. Bands were placed on 2,600 birds on the breeding grounds. Neck collars were placed on 1,750 of the banded birds. The maintenance of a large number of banded birds in this population is the basis for estimates of survival and migration patterns.

A co-operative study of lead levels in the blood of EPP Canada geese was undertaken with a graduate student from the University of Wisconsin. Two thousand blood samples were taken at Churchill; 300 blood samples and 800 gizzards were collected at Oak Hammock Marsh during fall migration.

One hundred and sixty-five giant Canada geese were banded at the Riverton Marshes and The Narrows in Lake Manitoba. Over 2,000 ducks were banded at Dauphin Lake.

Harvest estimates for the Oak Hammock Managed Hunting Area were calculated as part of the intensive hunter management program. The estimated harvest of Canada geese at Oak Hammock was 13,000 — the highest harvest on record. This is the third year in a row that a record high harvest has occurred. The implications of increasing harvest were being considered internally and in concert with other jurisdictions.

Sharp-Tailed Grouse

Action was taken to enhance the recovery the sharp-tailed grouse populations in the central Interlake area. Several areas in the Narcisse Wildlife Management Area were cleared in early 1987 to create new dancing grounds and remove excessive shrubby vegetation from old dancing grounds. The benefits generated by this habitat manipulation will be measured by a graduate student from the University of Manitoba.

Predatory-Prey Study and Simulation

Field work documenting the response of a wolf population to a very low abundance of prey (moose) continued for the third year in the Saskatchewan River Delta. Only one pack of 10 wolves was found in 1986-87 out of a total population of 20 — 25 wolves. In 1984-85 there were six packs in the area, each with smaller, more clearly defined home ranges, and totalling 40 — 45 animals. Very few moose kills were found, and there was virtually no use of alternate prey.

A computer simulation model focusing on the implications of low prey availability on pack integrity and foraging patterns was being developed. The results of this simulation work were expected to be extremely useful in developing management plans which deal with the complexity of wolf-ungulate systems.

Woodland Caribou and Forestry Study

The Wildlife Branch embarked on a co-operative study with Parks and Forestry Branches, Abitibi-Price Inc., and the University of Manitoba to devise timber harvesting guidelines that will minimize the impact of forestry operations over the next five years on the caribou herd east of Lake Winnipeg. This winter, approximately 25 radio-collared caribou were tracked to record movement patterns.

Hunter Questionnaires

A study was conducted of the bias that can exist in the present system of estimating big game harvests. Data was still being collected, but indications were that extremely useful corrections for non-response errors will be generated.

Riding Mountain Black Bears

A three-year co-operative study of the movements of black bears in the Riding Mountain area was agreed to by Environment Canada (Parks) and Manitoba Natural Resources.

Biological Analysis of Wildlife Specimens

Specimens for bioanalysis consisted of two main types: scheduled collections and incidentals collected by staff or donated by the public. During 1986-87, the jaws of 1,000 moose and elk were collected and aged. Of the 915 furbearer carcasses processed, 176 were lynx and the majority of the remainder were weasels. Wildlife specimens were also distributed to museums, universities and other agencies for collection or disease analysis purposes. The major health problem of furbearers was a high incidence of sarcoptic mange in foxes (western and southwestern Manitoba) and in wolves (The Pas area).

Fur Harvest Statistics

Entering its third year of operation, the fur harvest computer system continued to undergo refinement. Once completed it will be able to generate information on 15,000 trappers and the capture location of 200,000 — 300,000 harvested animals.

Habitat Investigation

Following air photo interpretation, ground-truthing of potential marsh habitat was undertaken as part of a proposal to reintroduce muskoxen to the Churchill area.

Improved Trapping Systems

Co-operative work with trap inventors and the Fur Institute of Canada continued during 1986-87, primarily in the area of power-snare development. A questionnaire program was implemented to provide current trap ownership and usage along with general trapper profile data.

Cadmium Investigations

Cadmium has become a focal issue in Manitoba and the department has received $42,000.00 from the World Wildlife Fund to look at the prevalence of this toxic metal in moose, elk, deer, wolves, bear and coyotes.

Birds of Prey Projects

Bald Eagle

For the fifth consecutive year funds provided by the US Fish & Wildlife Service made it possible to conduct an aerial search for bald eagle nests. In 1986 the Gods Lake area of north-central and eastern Manitoba was surveyed; 138 active eagle nests were found. It is now estimated that more than 1,500 eagle pairs nest in the province.

In return for funding the aerial surveys, Manitoba allowed US officials to take 10 nestling eagles from 10 different nests (each containing two or more young) for

release in New Jersey. Annual releases of Manitoba eaglets, which began in 1984, are helping to rebuild bald eagle populations in the eastern United States.

Burrowing Owl

Burrowing Owls were fairly common in southwestern Manitoba from 1930-1960, but populations have plummeted since then. Surveys made from 1982-1984 revealed a continuing decline from 76 breeding pairs in 1982 to 35 pairs in 1984. In 1986, 30 pairs were found but their reproductive success was poor. Suitable but unoccupied habitat surveyed in 1986 suggests that factors other than habitat loss were contributing to current declines. A combination of habitat loss, road kills, bad weather, and pesticide poisoning apparently has contributed to recent declines.

Great Gray Owl

Low vole populations inhibited great gray owl nesting activity in southeastern Manitoba. Close to 150 nest structures were checked one to three times, but only three active nests were found. Radio-tracking and visual observation of nine birds from these nests provided detailed information on habitat use, foraging behaviour and inter-family relationships.

Peregrine Falcon

Under Parks Canada funding, four young peregrine falcons obtained from the Canadian Wildlife Service facility at Wainwright, Alberta were successfully hacked from the roof of the Grain Exchange Building in downtown Winnipeg. Twenty-five birds have been released to date. A pair of adult falcons established a territory in downtown Winnipeg in 1986, but no eggs were produced. The pair consisted of a male released at the University of Manitoba campus in 1984 and a female released in Montreal in 1983. Unfortunately, the male later died accidentally.

Colonial Waterbird Projects

American White Pelican

An intensive search uncovered several pelican colonies. Colonies were found on 45 islands in lakes Manitoba, Winnipeg and Winnipegosis. Approximately 30,000 pelicans nested in Manitoba, making up almost half the current Canadian population. Eggs of pelicans, double-crested cormorants, California and ring-billed gulls, caspian and common terns, and great blue herons were analyzed to determine pesticide residues.

Piping Plover

The status of the Piping Plover in Manitoba appeared to be precarious, as was the case throughout most of its North American range. Only 120 breeding birds were counted in the province in 1985.

Hunting Licences Sold, 1986-87

Type of Licence	Fee	Number Sold	Revenue
Game Bird			
Resident of Manitoba	$ 7.00	32,545	$212,333.00
Non-Resident (Canadian)	45.00	1,011	45,049.50
Non-Resident (Non-Canadian)	85.00	5,069	428,598.00
Wild Turkey			
Resident of Manitoba			
Spring 1985	10.00	151	1,510.00
Spring 1986	10.00	365	3,650.00
Moose			
Resident of Manitoba	30.00	7,244	215,051.50
Non-Resident (Canadian)	250.00	3	750.00
Non-Resident (Non-Canadian)	300.00	63	18,900.00
Elk			
Resident of Manitoba	30.00	2,811	84,330.00
Woodland Caribou			
Resident of Manitoba	30.00	187	5,603.50
Black Bear			
Resident of Manitoba	12.00	3,065	35,613.50
Non-Resident (Canadian)	50.00	15	750.00
Non-Resident (Non-Canadian)	100.00	656	65,486.00
Deer			
Resident of Manitoba	17.00	38,752	640,485.00
Non-Resident (Canadian)	80.00	304	24,319.50
Non-Resident (Non-Canadian)	100.00	92	9,196.00
Timber Wolf			
Non-Resident (Canadian)	25.00	1	25.00
Non-Resident (Non-Canadian)	50.00	3	150.00
Total Licence Sales			
Resident of Manitoba		85,120	1,198,576.50
Non-Resident (Canadian)		1,334	70,894.00
Non-Resident (Non-Canadian)		5,883	522,330.00
Total		92,337	$1,791,800.50
Replacement	variable	341	1,169.00
Wildlife Certificates	7.00	64,615	422,833.00
		157,293	$2,215,802.50

Hunting Licence Sales and Revenue, 1977-78 to 1986-87

	Game Bird		Big Game		Wildlife Certificates		Total Licences & Certificates	
Year	Licences Sold	Revenue	Licences Sold	Revenue	Licences Sold	Revenue	Licences Sold	Revenue
1977-78	56,567	379,400.75	52,381	554,025.50	77,862	157,485.00	186,810	1,090,911.25
1978-79	60,061	402,525.75	55,822	596,778.75	82,267	165,835.25	198,150	1,165,139.75
1979-80	59,783	440,639.25	48,250	539,079.50	77,855	157,039.00	185,888	1,136,757.75
1980-81	58,091	460,939.75	60,505	666,291.25	83,022	167,673.00	201,618	1,294,904.00
1981-82	56,203	474,355.50	66,570	713,353.25	83,998	169,719.00	206,771	1,357,427.75
1982-83	51,618	621,183.00	66,711	1,081,211.50	81,225	207,131.50	199,554	1,909,526.00
1983-84	44,731	697,294.50	64,062	1,134,739.50	75,119	266,116.50	183,912	2,098,150.50
1984-85	38,826	565,929.00	59,406	1,158,430.00	68,233	309,957.00	166,465	2,034,316.00
1985-86	35,342	588,487.00	52,541	1,066,958.00	62,607	409,699.00	150,490	2,065,144.00
1986-87	39,141	691,140.50	53,537	1,101,829.00	64,615	422,833.00	157,293	2,215,802.50

Wildlife-Based Revenues 1986-87

Type of Licence	Revenue
Hunting Licences	
Wildlife Certificates	$ 422,833.00
Game Bird Licences	685,980.50
Wild Turkey Licences*	5,160.00
Black Bear Licences	101,849.50
Replacement Licences	1,169.00
Caribou Licences	5,603.50
Deer Licences	674,000.50
Elk Licences	84,330.00
Moose Licences	234,701.50
Timber Wolf Licences	175.00
Total	$2,215,802.50
Commercial Licences	
Trapper Licences	$83,256.00
Fur Dealer Licences	4,300.00
Tanner Licences	100.00
Taxidermist Licences	1,875.00
Shooting Preserve Licences	300.00
Dog Trainer Licences	922.00
Game Bird Farm Licences	1,750.00
Amphibian/Reptile Licences	1,080.00
Guide Licences	4,735.00
Total	$98,318.00
Fur Royalties	$183,892.00
Miscellaneous Revenue	$3,100.65
Total	$2,501,113.15

NOTE: *Revenues are based on receipts applicable to licence and fur years rather than to the fiscal year.*

** Wild Turkey Licence figure combines the 1985 and 1986 spring hunts.*

Quantity Produced, Average Pelt Price, Value of Production and Provincial Royalty Paid, By Species, For the Year Ending August 31, 1987

Species	Quantity	Average Price	Value	% of Total Value (approx.)	Royalty Per Pelt	Royalty
Badger	368	22.50	$ 8,280	0.1	$ 1.00	$ 368
Bear	691	64.00	44,224	0.6	2.00	1,382
Beaver	51,700	36.00	1,861,200	23.1	1.00	51,700
Coyote	11,148	84.50	942,006	11.7	2.00	22,296
Ermine	9,550	2.90	27,695	0.3	.10	955
Fisher	3,501	288.00	1,008,288	12.5	3.00	10,503
Fox, Blue	2	20.00	40	0.0	2.00	4
Fox, Cross	445	71.00	31,595	0.4	2.00	890
Fox, Red	10,558	33.00	348,414	4.3	2.00	21,116
Fox, Silver	77	42.50	3,273	0.0	2.00	154
Fox, White	127	17.50	2,223	0.0	1.00	127
Lynx/Bobcat	400	604.00	241,600	3.0	10.00	4,000
Marten	11,219	120.00	1,346,280	16.7	2.00	22,438
Mink	15,311	54.00	826,794	10.3	1.00	15,311
Muskrat	215,681	5.00	1,078,405	13.4	.10	21,568
Otter	2,516	52.00	130,832	1.6	1.50	3,774
Raccoon	5,436	20.00	108,720	1.4	1.00	5,436
Squirrel	14,659	.75	10,994	0.1	.05	733
Wolf, Timber	291	98.50	28,664	0.4	2.00	582
Wolverine	111	185.50	20,591	0.3	4.00	555
Total			$8,070,118			$183,892

Number of Open Area and Registered Trappers and the Estimated Value of Manitoba Wild Fur Production for the 12 Month Period Ending August 31st, 1987[1]

Year	Open Area Licences Sold	Registered Trapline Permits Sold	Production Value
1977-78	8,379	2,975	$5,047,377
1978-79	10,040	3,238	7,882,404
1979-80	12,809	3,627	9,615,604
1980-81	13,327	3,425	8,240,619
1981-82	13,072	3,187	5,564,491
1982-83	13,938	3,110	4,313,572
1983-84	12,110	2,927	3,783,562
1984-85	12,917	2,975	4,764,525
1985-86	11,926	2,917	5,061,209
1986-87	12,302	2,745	8,070,118

[1] *In 1981-82, the departmental fur year was changed to the 12 month period ending August 31st. The information for all previous years is based on the 12 month period ending September 30th.*

Appendix I

Manitoba Natural Resources

Summary Revenue and Expenditures 1986-87

Revenue

Branch	Revenue ($'000)
Fisheries	$ 1,879.5
Forestry	2,965.6
Lands	1,005.0
Parks	4,880.7
Water Resources	32,062.1
Wildlife (& Commissions)	2,523.4
Sundry	694.4
Municipalities Shared Costs Receipts	72.3
Government of Canada (Shared-cost receipts)	741.0
Total:	$46,824.0

Summary of Expenditures

Appropriation	Service			
	Current and Capital	Actual ($'000)	Estimate ($'000)	Variance ($'000) Over/(Under) Estimate
12-1	Administration and Finance	3,935.2	3,950.8	(15.6)
12-2	Regional Services	20,108.2	20,919.8	(811.6)
12-3	Engineering and Construction	6,704.3	6,721.9	(17.6)
12-4	Water Resources	8,481.1	8,854.3	(373.2)
12-5	Parks	13,219.1	13,517.5	(298.4)
12-6	Lands	1,946.5	1,975.5	(29.0)
12-7	Forestry	7,294.7	7,329.2	(34.5)
12-8	Fisheries	3,891.6	3,733.0	158.6
12-9	Wildlife	4,616.8	3,937.9	678.9
12-10	Surveys and Mapping	3,008.3	3,065.5	(57.2)
12-11	Resource Support Programs	733.3	832.2	(98.9)
12-12	Expenditures Related to Capital	8,782.7	10,387.0	(1,604.3)
	Total:	82,721.8	85,224.6	(2,502.8)
	Jobs Fund Initiative			
	Current	5,973.7	5,064.7	909.0
	Capital	1,855.2	1,650.0	205.2
	Sub-total:	7,828.9	6,714.7	1,114.2
	Recovered from Jobs Fund	(7,828.9)	(6,714.7)	(1,114.2)
	Total:	0.0	0.0	0.0

Appendix II

Summary of Expenditures by Appropriation 1986-87

Appropriation	Service	1986-87			Explanation Number
		Actual ($'000)	Estimate ($'000)	Variance ($'000) Over/(Under) Estimate	
12-1	**Administration and Finance**				
	(a) Minister's Salary	19.5	20.6	(1.1)	
	(b) Executive Support				
	Salaries	227.7	234.1	(6.4)	
	Other Expenditures	93.0	86.3	6.7	
	(c) Research and Planning				
	Salaries	427.9	400.6	27.3	
	Other Expenditures	46.1	40.7	5.4	
	(d) Communications	293.2	287.7	5.5	
	Salaries	125.1	141.7	(16.6)	
	Other Expenditures				
	(e) Financial Services				
	Salaries	701.7	692.0	9.7	
	Other Expenditures	164.7	185.1	(20.4)	
	(f) Personnel Services				
	Salaries	558.7	544.9	13.8	
	Other Expenditures	98.5	104.0	(5.5)	
	(g) Computer Services				
	Salaries	278.2	288.1	(9.9)	
	Other Expenditures	43.5	44.3	(0.8)	
	(h) Administrative Services				
	Salaries	604.8	617.1	(12.3)	
	Other Expenditures	110.2	121.6	(11.4)	
	(j) Internal Audit	136.9	134.9	2.0	
	Salaries				
	Other Expenditures	5.5	7.1	(1.6)	
	TOTAL 12-1	3,935.2	3,950.8	(15.6)	

Appropriation	Service	1986-87 Actual ($'000)	1986-87 Estimate ($'000)	1986-87 Variance ($'000) Over/(Under) Estimate	Explanation Number
12-2	**Regional Services**				
	(a) Administrative Services				
	Salaries	507.2	555.0	(47.8)	
	Other Expenditures	701.9	682.1	19.8	
	Problem Wildlife Control	127.8	138.7	(10.9)	
	(b) Northwest Region				
	Salaries	857.2	874.0	(16.8)	
	Other Expenditures	389.3	388.7	0.6	
	(c) Northeast Region				
	Salaries	1,072.6	1,076.7	(4.1)	
	Other Expenditures	682.5	648.8	33.7	
	(d) Interlake Region				
	Salaries	1,287.2	1,232.7	54.5	
	Other Expenditures	488.0	467.7	20.3	
	(e) Southwest Region				
	Salaries	765.3	724.9	40.4	
	Other Expenditures	279.4	278.2	1.2	
	(f) Western Region				
	Salaries	1,081.4	1,041.7	39.7	
	Other Expenditures	463.2	456.3	6.9	
	(g) Southeast Region				
	Salaries	959.4	978.0	(18.6)	
	Other Expenditures	380.9	400.0	(19.1)	
	(h) Eastern Region				
	Salaries	827.8	812.5	15.3	
	Other Expenditures	290.5	288.6	1.9	
	(i) Whiteshell Region				
	Salaries	533.9	547.1	(13.2)	
	Other Expenditures	225.2	196.8	28.4	
	(k) Enforcement and Legislative Services				
	Salaries	226.1	185.2	40.9	1
	Other Expenditures	53.2	68.8	(15.6)	2
	(m) N.D.A. — Provincial — Fire Suppression — Administration				
	Salaries	288.4	290.1	(1.7)	—
	Other Expenditures	222.1	252.1	(30.0)	—

Appropriation	Service	1986-87			Explanation Number
		Actual ($'000)	Estimate ($'000)	Variance ($'000) Over/(Under) Estimate	
12-2	**Regional Services (cont'd)**				
	(n) N.D.A. — Provincial — Fire Detection Program				
	Salaries	48.3	50.9	(2.6)	—
	Other Expenditures	286.2	333.1	(46.9)	—
	(p) N.D.A. — Provincial — Fire Prevention Program				
	Salaries	29.7	44.8	(15.1)	3
	Other Expenditures	67.4	116.9	(49.5)	4
	(r) N.D.A. — Provincial — Fire Pre-Suppression Program				
	Salaries	1,219.6	1,262.8	(43.2)	—
	Other Expenditures	2,135.7	2,094.2	41.5	—
	(s) N.D.A. — Provincial — Fire Extra-Suppression Fund	1,561.7	2,000.0	(438.3)	5
	(t) N.D.A. — Provincial — Fire Tac Program				
	Salaries	31.6	192.7	(161.1)	6
	Other Expenditures	1,045.1	951.9	93.2	—
	(w) N.D.A.— Provincial — Helitac Program	972.4	1,287.8	(315.4)	7
	TOTAL 12-2	20,108.2	20,919.8	(811.6)	

Explanation Number	Appropriation Number/Name	Explanations
1.	12-2K-1 Enforcement and Legislative Services	Additional funding was required for severance pay and vacation pay due to unforseen employee retirements.
2.	12-2K-2 Enforcement and Legislative Services	T.B. 35/86-12(e) requested a reduction in expenditures after the Estimates were approved.
3.	12-2P-1 N.D.A. — Provincial — Fire Prevention Program	T.B. 35/86-12(e) requested a reduction in expenditures after the Estimates were approved.
4.	12-2P-2 N.D.A. — Provincial — Fire Prevention Program	T.B. 35/86-12(e) requested a reduction in expenditures after the Estimates were approved. Funding allotted for an Attitudinal Study was not utilized.
5.	12-2S N.D.A. — Provincial — Extra-Suppression Fund	T.B. 35/86-12(e) requested a reduction in expenditures after the Estimates were approved. Fire emergencies were not as frequent or costly as anticipated due to favourable weather conditions.
6.	12-2T-1 N.D.A. — Provincial — Fire Tac Program	T.B. 35/86-12(e) requested a reduction in expenditures after the Estimates were approved. Staff Years were not approved for 1986-87, however, the funding was approved for departmental employees salaries. Later in the year the surplus funding was utilized by 12-2T-2 where provisions for departmental staff existed.
7.	12-2W N.D.A. — Provincial — Helitac Program	T.B. 35/86-12(e) requested a reduction in expenditures after the Estimates were approved. Due to favourable weather conditions the incidence of forest fires requiring helicopter assistance to control was not as great as had been anticipated when the Estimates were prepared.

Appropriation	Service Current and Capital	1986-87 Actual ($'000)	Estimate ($'000)	Variance ($'000)	Explanation Number
				Over/(Under) Estimate	
12-3	**Engineering and Construction**				
	(a) Administration				
	Salaries	416.5	448.8	(32.3)	—
	Other Expenditures	161.3	354.1	(192.8)	1
	Recoveries	(57.0)	(250.0)	193.0	2
	(b) Technical Services				
	Salaries	1,339.4	1,373.7	(34.3)	—
	Other Expenditures	88.0	42.5	45.5	3
	Recoveries	(54.3)	(40.0)	(14.3)	4
	(c) Regional Engineering Services				
	Salaries	4,043.0	3,986.0	57.0	—
	Other Expenditures	800.8	841.3	(40.5)	—
	Recoveries	(33.4)	(34.5)	1.1	—
	TOTAL 12-3	6,704.3	6,721.9	(17.6)	

Explanation Number	Appropriation Number/Name	Explanations
1.	12-3A-2 Administration	Requests for service by Engineering and Construction Project Management portion, were not as great as were anticipated at the time of the 1986-87 Estimates.
2.	12-3A-3 Administration (Recoveries)	Recoveries are related to the volume of requests for service which had declined from the original estimate for 1986-87.
3.	12-3B-2 Technical Services	A miscalculation when the Estimates were prepared resulted in a $50,000 trade-off being shown here instead of 12-3C-2 where it should have applied. 12-3C-2 shows a corresponding under-expenditure.
4.	12-3B-3 Technical Services (Recoveries)	Recoveries from services performed exceeded the original estimates.

Appropriation	Service Current and Capital	1986-87 Actual ($'000)	1986-87 Estimate ($'000)	1986-87 Variance ($'000) Over/(Under) Estimate	Explanation Number
12-4	**Water Resources**				
	(a) Administration				
	Salaries	333.2	326.4	6.8	—
	Other Expenditures	187.1	118.8	68.3	1
	(b) Water Licensing and Approvals				
	Salaries	407.6	404.0	3.6	—
	Other Expenditures	25.0	28.3	(3.3)	—
	(c) Water Management				
	Salaries	1,285.1	1,314.9	(29.8)	—
	Other Expenditures	213.4	293.7	(80.3)	2
	Waterway Maintenance	3,682.9	3,770.6	(87.7)	—
	(d) Hydrotechnical Services				
	Salaries	1,003.9	1,022.1	(18.2)	—
	Other Expenditures	759.0	827.4	(68.4)	—
	(e) Regional Management				
	Salaries	313.8	309.4	4.4	—
	Other Expenditures	38.7	40.3	(1.6)	—
	(f) Canada/Manitoba Flood Damage Reduction Agreement				
	Salaries	189.3	236.8	(47.5)	3
	Other Expenditures	42.1	161.6	(119.5)	4
	TOTAL 12-4	8,481.1	8,854.3	(373.2)	

Explanation Number	Appropriation Number/Name	Explanations
1.	12-4A-2 Administration	Unforeseen expenditures to hire a consultant to advise on the pending court action brought about by the Whitemud River Grassy Marsh Association related to alleged flooding by the Province of Manitoba.
2.	12-4C-2 Water Management	Provisions for the Carman District court case were not utilized as preparations for the defense by the province were delayed and the proceedings did not reach the court room stage. The allegation was that flooding created by the Province's actions caused damage to farmlands.
3.	12-4G-1 Canada/Manitoba Flood Damage Prevention Agreement	Staff vacancies continued through the 1986-87 fiscal year resulting in fewer program starts and activities.
4.	12-4G-2 Canada/Manitoba Flood Damage Prevention Agreement	Operating expenditures were not utilized due to staff vacancies resulting in fewer program starts and activities.

Appropriation	Service Current and Capital	1986-87 Actual ($'000)	1986-87 Estimate ($'000)	1986-87 Variance ($'000) Over/(Under) Estimate	Explanation Number
12-5	**Parks**				
	(a) Administration				
	Salaries	292.7	298.7	(6.0)	—
	Other Expenditures	162.7	195.2	(32.5)	1
	(b) Park Planning				
	Salaries	684.4	739.0	(54.6)	—
	Other Expenditures	114.8	158.5	(43.7)	—
	(c) Program Management				
	Salaries	365.7	385.1	(19.4)	—
	Other Expenditures	47.4	56.7	(9.3)	—
	(d) Park Maintenance				
	Salaries	8,223.0	8,302.8	(79.8)	—
	Other Expenditures	2,796.5	2,820.6	(24.1)	—
	(e) Visitor Services				
	Salaries	383.5	388.8	(5.3)	—
	Other Expenditures	84.7	98.4	(13.7)	—
	(f) Grant Assistance	63.7	73.7	(10.0)	
	TOTAL 12-5	13,219.1	13,517.5	(298.4)	

Explanation Number	Appropriation Number/Name	Explanations
1.	12-5B-2 Park Planning	T.B. 35/86-12(e) requested a reduction in expenditures after the 1986-87 Estimates were approved. Vacant positions resulted in less funding required for support costs.

Appropriation	Service Current and Capital	1986-87 Actual ($'000)	1986-87 Estimate ($'000)	1986-87 Variance ($'000) Over/(Under) Estimate	Explanation Number
12-6	**Lands**				
	(a) Administration				
	Salaries	78.2	72.3	5.9	—
	Other Expenditures	15.1	17.9	(2.8)	
	(b) Crown Lands Administration				
	Salaries	701.8	720.9	(19.1)	—
	Other Expenditures	89.4	97.8	(8.4)	
	(c) Regional Management				
	Salaries	315.7	308.9	6.8	—
	Other Expenditures	87.6	92.8	(5.2)	
	(d) Crown Lands Registry				
	Salaries	265.9	267.2	(1.3)	—
	Other Expenditures	221.5	221.6	(0.1)	
	(e) N.D.A. — Provincial — Wild Rice				
	Salaries	105.1	104.5	0.6	—
	Other Expenditures	66.2	71.6	(5.4)	
	TOTAL 12-6	1,946.5	1,975.5	(29.0)	

Appropriation	Service Current and Capital	1986-87 Actual ($'000)	Estimate ($'000)	Variance ($'000) Over/(Under) Estimate	Explanation Number
12-7	**Forestry**				
	(a) Administration				
	Salaries	186.9	183.8	3.1	—
	Other Expenditures	26.7	30.5	(3.8)	
	Grant Assistance	34.4	34.4	0.0	
	(b) Forest Inventory				
	Salaries	571.3	565.7	5.6	—
	Other Expenditures	147.8	148.3	(0.5)	
	(c) Timber Management and Development				
	Salaries	214.3	246.3	(32.0)	—
	Other Expenditures	53.8	52.7	1.1	
	(d) Silviculture				
	Salaries	261.1	239.8	21.3	—
	Other Expenditures	874.4	886.7	(12.3)	
	(e) Forest Protection				
	Salaries	715.6	746.9	(31.3)	—
	Other Expenditures	1,268.0	1,259.5	8.5	
	(f) Regional Management				
	Salaries	700.1	695.1	5.0	—
	Other Expenditures	230.2	230.7	(0.5)	
	(g) N.D.A. — Provincial — Forest Renewal				
	Salaries	467.9	460.2	7.7	—
	Other Expenditures	1,542.2	1,548.6	(6.4)	
	TOTAL 12-7	7,294.7	7,329.2	(34.5)	
	(h) Jobs Fund Initiatives — Sectoral Projects				
	Salaries	221.1	273.1	(52.0)	—
	Other Expenditures	3,694.4	2,619.1	1,075.3	
	Jobs Fund — Recoverable	(3,915.5)	(2,892.2)	(1,023.3)	—
	(j) Jobs Fund Initiatives — Canada/ Manitoba Forest Renewal Agreement				
	Salaries	14.2	14.5	(0.3)	—
	Other Expenditures	2,044.0	2,158.0	(114.0)	
	Jobs Fund — Recoverable	(2,058.2)	(2,172.5)	114.3	—
	TOTAL	0.0	0.0	0.0	

Explanation Number	Appropriation Number/Name	Explanations
1.	12-7H-2 Sectoral Projects	E.R.I.C. Jobs Fund granted additional authority to spend $1,091.7 during 1986-87.

Appropriation	Service Current and Capital	1986-87 Actual ($'000)	1986-87 Estimate ($'000)	1986-87 Variance ($'000) Over/(Under) Estimate	Explanation Number
12-8	**Fisheries**				
	(a) Administration				
	Salaries	227.1	223.8	3.3	—
	Other Expenditures	42.2	48.1	(5.9)	—
	(b) Regional Management				
	Salaries	713.2	713.8	(0.6)	—
	Other Expenditures	223.7	236.1	(12.4)	—
	(c) Fish Culture				
	Salaries	574.8	587.5	(12.7)	—
	Other Expenditures	213.3	232.7	(19.4)	—
	(d) Fisheries Enhancement				
	Salaries	602.0	544.3	57.7	—
	Other Expenditures	136.5	91.3	45.2	—
	(e) Commercial Fishing Management				
	Salaries	174.2	173.7	0.5	—
	Other Expenditures	31.1	16.7	14.4	—
	(f) Sport Fishing Management				
	Salaries	118.0	116.8	1.2	—
	Other Expenditures	50.3	26.0	24.3	—
	(g) Northern Fishermen's Freight Assistance	370.9	342.6	28.3	—
	(h) Fishermen's Loan Program — Administration	414.3	379.6	34.7	—
	TOTAL 12-8	3,891.6	3,733.0	158.6	

Appropriation	Service Current and Capital	1986-87 Actual ($'000)	1986-87 Estimate ($'000)	1986-87 Variance ($'000) Over/(Under) Estimate	Explanation Number
12-9	**Wildlife**				
	(a) Administration				
	Salaries	158.4	174.1	(15.7)	—
	Other Expenditures	26.2	22.0	4.2	—
	(b) Operational Management				
	Salaries	325.9	318.4	7.5	—
	Other Expenditures	141.4	129.1	12.3	—
	Grant Assistance	1.0	1.0	0.0	—
	(c) Habitat Management				
	Salaries	431.8	430.6	1.2	—
	Other Expenditures	269.8	194.1	75.7	1
	(d) Biological Services				
	Salaries	425.3	405.6	19.7	—
	Other Expenditures	205.8	188.4	17.4	—
	Grant Assistance	12.0	12.0	0.0	—
	(e) Regional Management				
	Salaries	459.4	455.4	4.0	—
	Other Expenditures	161.8	252.6	(90.8)	2
	(f) N.D.A. — Provincial — Wildlife Management				
	Salaries	94.2	115.1	(20.9)	—
	Other Expenditures	110.6	124.0	(13.4)	—
	(g) Fur Management				
	Salaries	459.4	428.9	30.5	—
	Other Expenditures	325.1	160.6	164.5	3
	Grant Assistance	60.9	30.9	30.0	4
	(h) Canada-Manitoba Waterfowl Damage Prevention Agreement	408.7	200.0	208.7	5
	(j) Commercial Wildlife Management				
	Salaries	151.1	147.3	3.8	—
	Other Expenditures	141.8	28.5	113.3	6
	Grant Assistance	3.4	4.0	(0.6)	—
	Big Game Damage Compensation	242.8	115.3	127.5	7
	TOTAL 12-9	4,616.8	3,937.9	678.9	

Explanation Number	Appropriation Number/Name	Explanations
1.	12-9C-2 Habitat Management	Centralization of all activities related to Wildlife Management Area development and maintenance was placed under one manager. This was not anticipated in the 1986-87 Estimates.
2.	12-9E-2 Regional Management	Wildlife Management Area development and maintenance activities being undertaken by 12-9C-2, Habitat Management.
3.	12-9G-2 Fur Management	A new Canada-Manitoba Co-operative Wildlife Management with the Indian People Agreement T.B. #41/86-12(b) was signed after the 1986-87 Estimates were approved and was not anticipated at that time.
4.	12-9G-3 Fur Management Grant Assistance	A grant was given to the Manitoba Registered Trappers Association related to the new Agreement signed after the 1986-87 Estimates were approved and not anticipated at that time.
5.	12-9H Canada/Manitoba Waterfowl Damage Agreement	Due to a damp, cool growing season, crops were not harvested when migration occurred resulting in extraordinary purchases of scaring equipment and lure crops to prevent depredation of the grain.
6.	12-9J-2 Commercial Wildlife Management	The signing of the Canada/Manitoba Co-operative Wildlife Management and the Indian People Agreement that was not anticipated at the time of the 1986-87 Estimates preparation.
7.	12-9J-4 Big Game Damage Compensation	T.B. #42/86-12(c) gave authority to expend up to an additional $155.0 on the Big Game Damage Compensation Program. The late harvesting of the crops due to inclement weather left the harvest vulnerable to damage by big game and subsequent claims for compensation.

Appropriation	Service Current and Capital	1986-87 Actual ($'000)	1986-87 Estimate ($'000)	1986-87 Variance ($'000) Over/(Under) Estimate	Explanation Number
12-10	**Surveys and Mapping**				
	(a) Administration				
	Salaries	242.5	245.4	(2.9)	—
	Other Expenditures	45.3	45.3	0.0	—
	(b) Legal Surveys				
	Salaries	606.8	623.0	(16.2)	—
	Other Expenditures	211.7	370.0	(158.3)	1
	Recoveries	(20.4)	(170.0)	149.6	2
	(c) Control Surveys				
	Salaries	335.1	324.1	11.0	—
	Other Expenditures	113.1	126.2	(13.1)	
	(d) Mapping				
	Salaries	592.0	581.8	10.2	—
	Other Expenditures	95.3	95.5	(0.2)	—
	Recoveries	(38.0)	(31.0)	(7.0)	3
	(e) Map Distribution and Remote Sensing				
	Salaries	327.6	345.7	(18.1)	—
	Other Expenditures	299.2	330.2	(31.0)	—
	Recoveries	(149.8)	(145.0)	(4.8)	—
	(f) Computer Services and Data Management				
	Salaries	283.0	277.9	5.1	—
	Other Expenditures	64.9	46.4	18.5	4
	TOTAL 12-10	3,008.3	3,065.5	(57.2)	

Explanation Number	Appropriation Number/Name	Explanations
1.	12-10B-2 Legal Surveys	A provision was made in 1986-87 Estimates for probable work to be performed under the Northern Flood Agreement. The work is mainly requested by the Federal Government, however, during 1986-87 there were no requests.
2.	12-10B-3 Legal Surveys (Recoveries)	These recoveries are nearly all related to the Northern Flood Agreement and claims were not made in 1986-87 due to lack of requests from Canada for services.
3.	12-10D-3 Mapping (Recoveries)	Requests for service were higher than anticipated when the 1986-87 Estimates were prepared.
4.	12-10F-2 Computer Services and Data Management	The land Information System was to be transferred from Water Resources, however, it was utilized in a reduction exercise which caused an over-expenditure in this area.

Appropriation	Service Current and Capital	1986-87 Actual ($'000)	1986-87 Estimate ($'000)	1986-87 Variance ($'000) Over/(Under) Estimate	Explanation Number
12-11	**Resource Support Programs**				
	(a) Manitoba Water Commission				
	Salaries	50.2	64.1	(13.9)	1
	Other Expenditures	28.1	42.4	(14.3)	2
	(b) Garrison Diversion Opposition	25.1	50.0	(24.9)	3
	(c) Conservation Districts Authority				
	Salaries	242.2	235.5	6.7	—
	Other Expenditures	117.7	170.2	(52.5)	4
	(d) Habitat Enhancement Fund	250.0	250.0	0.0	—
	(e) Natural Resource Institute Grant	20.0	20.0	0.0	—
	TOTAL 12-11	733.3	832.2	(98.9)	

Explanation Number	Appropriation Number/Name	Explanations
1.	12-11A-1 Manitoba Water Commission	An employee worked on an approved part-time basis (3 days a week) where funding was voted for full-time.
2.	12-11A-2 Manitoba Water Commission	A meeting to take place in Northern Manitoba with the Natives of the Pukatawagan Reserve did not take place as was anticipated in the 1986-87 Estimates.
3.	12-11B Garrison Diversion Opposition	Funding provided for legal services and lobbying regarding this opposition was not utilized due to inactivity by the U.S. government on the matter.
4.	12-11C-2 Conservation Districts Authority	Planned programs and projects did not get underway due to delays in receiving approvals, finalizing contracts and obtaining agreements with various officials in different Conservation Districts.

Appropriation	Service Current and Capital	1986-87 Actual ($'000)	Estimate ($'000)	Variance ($'000) Over/(Under) Estimate	Explanation Number
12-12	**Expenditures Related to Capital**				
12-12A	ACQUISITION/CONSTRUCTION OF PHYSICAL ASSETS — N.D.A. — PROVINCIAL				
12-12A-5A	**Northern Park Development**	232.6	242.5	(9.9)	—
12-12B	ACQUISITION/CONSTRUCTION OF PHYSICAL ASSETS — OTHER CAPITAL PROJECTS				
12-12B-1	**Administration and Finance**				
	(a) Computer Equipment	89.9	90.0	(0.1)	—
12-12B-2	**Regional Services**				
	(a) Equipment Purchases	203.0	184.6	18.4	—
	(b) Regional Infrastructure	74.1	75.0	(0.9)	—
	(c) Western Regional Resource Road Maintenance	25.0	25.0	0.0	—
	TOTAL 12-12B-2	302.1	284.6	17.5	
12-12B-3	**Engineering and Construction**				
	(a) Materials Inventory	(9.9)	150.0	(159.9)	1
	(b) Holding Account — Payments	1,365.4	2,500.0	(1,134.6)	2
	(c) Holding Account — Recoveries	(1,365.4)	(2,500.0)	1,134.6	2
	(d) Turtle River Watershed	43.5	0.0	43.5	3
	TOTAL 12-12B-3	33.6	150.0	(116.4)	
12-12B-4	**Water Resources**				
	(a) Infrastructure for Enhancement of Agricultural Production	633.7	825.0	(191.3)	4
	(b) Bridge Replacement Program	477.2	515.0	(37.8)	—
	(c) Cooks Creek	358.7	400.0	(41.3)	—
	(d) Pasquia Dyking — Natives	225.0	225.0	0.0	—
	(e) Canada/Manitoba Agri-Food Agreement	286.7	1,500.0	(1,213.3)	5
	(f) Town Dykes	637.4	770.0	(132.6)	—
	(g) Escarpment and Flood Erosion Control	84.0	140.0	(56.0)	6
	(h) Canada/Manitoba Water Development Agreement	31.0	50.0	(19.0)	7
	(j) C.P. Rail Bridge — La Riverie	404.8	0.0	404.8	8
	(m) C.N. Rail Bridge — Sprague	633.4	0.0	633.4	9
	TOTAL 12-12B-4	3,771.9	4,425.0	(653.1)	

Appropriation	Service Current and Capital	1986-87 Actual ($'000)	1986-87 Estimate ($'000)	1986-87 Variance ($'000) Over/(Under) Estimate	Explanation Number
12-12	**Expenditures Related to Capital (Continued)**				
12-12B-5	**Parks**				
	(a) Park Infrastructure Replacement	1,279.5	1,503.9	(224.4)	10
	(b) Vacation Home Lots	139.4	180.0	(40.6)	11
	(c) Facility Enhancement	446.5	600.0	(153.5)	12
	(z) Recoverable from Destination Manitoba	(100.0)	(100.0)	0.0	—
	TOTAL 12-12B-5	1,765.4	2,183.9	(418.5)	
12-12B-6	**Lands**				
	(a) Cottage Lot Subdivision Upgrading	100.4	100.0	0.4	
	(b) Equipment Purchases	29.4	30.0	(0.6)	
	TOTAL 12-12B-6	129.8	130.0	(0.2)	
12-12B-7	**Forestry**				
	(a) Equipment Purchases	25.4	30.0	(4.6)	—
	TOTAL 12-12B-7	25.4	30.0	(4.6)	
12-12B-8	**Fisheries**				
	(a) Equipment Purchases	29.7	30.0	(0.3)	—
	TOTAL 12-12B-8	29.7	30.0	(0.3)	
12-12B-9	**Wildlife**				
	(a) Equipment Purchases	20.0	20.0	0.0	—
	(b) Facility Enhancement Projects	35.6	40.0	(4.4)	—
	(c) Oak Hammock Marsh	116.0	117.0	(1.0)	—
	TOTAL 12-12B-9	171.6	177.0	(5.4)	
12-12B-10	**Surveys and Mapping**				
	(a) Equipment Purchases	11.2	11.5	(0.3)	—
	(b) Air Photo Negatives Recovery	80.8	88.0	(7.2)	—
	(c) Digital Map Conversion	318.0	318.0	0.0	—
	TOTAL 12-12B-10	410.0	417.5	(7.5)	

Appropriation	Service Current and Capital	1986-87			Number
		Estimate ($'000)	Variance ($'000)	Explanation ($'000)	
				Over/(Under) Estimate	
12-12	**Expenditures Related to Capital (Continued)**				
12-12B-12	**Conservation Districts Authority**				
	(a) Canada/Manitoba Agri-Food Agreement	59.7	300.0	(240.3)	13
	TOTAL 12-12B-12	59.7	300.0	(240.3)	
12-12C	**Capital Grants**				
	Grants to Conservation Districts	1,761.0	1,926.5	(165.5)	—
	TOTAL 12-12C	1,761.0	1,926.5	(165.5)	
	TOTAL 12-12	8,782.7	10,387.0	(1,604.3)	
12-12B-11	**Jobs Fund Initiatives**				
	(a) Sectoral Projects — Forest Renewal	371.5	400.0	(28.5)	—
	(b) Canada/Manitoba Forest Renewal Management	1,483.7	1,250.0	233.7	14
	(c) Recoverable from Jobs Fund	(1,855.2)	(1,650.0)	(205.2)	—
	TOTAL 12-12B-11	0.0	0.0	0.0	

Explanation Number	Appropriation Number/Name		Explanations
1.	12-12B-3A	Materials Inventory	Revolving inventory of capital works materials with recoveries crossing year-end. 100% recoveries to the account.
2.	12-12B-3B/C	Holding Account Account Payment/-Recoveries	These holding and subsequent recovery accounts are dependent on the various programs being undertaken by the Engineering and Construction Branch and at no time will the amount recovered vary from the amount placed on hold.
3.	12-12B-3D	Turtle River Watershed	During 1986-87 this project was separated from Grants to Conservation Watershed Districts for better control of the expenditures.
4.	12-12B-4A	Infrastructure for the Enhancement of Agricultural Production	Delays in obtaining right-of-ways and completion of a project below estimate due to favourable tender prices resulted in a variance.
5.	12-12B-4E	Canada/Manitoba Agri-Food Agreement	— Failure to reach agreement with the Department of Indian Affairs re: Pasquia Polder III. Construction could not be commenced. — Washow Bay project did not commence due to failure to obtain cost-shared arrangements with Canada and the Municipalities. — Cowan Bay project was not completed as site investigations were delayed.
6.	12-12B-4G	Escarpment and Flood Erosion Control	Delay in acquiring right-of-way prevented construction from starting — funds were expended on construction materials.
7.	12-12B-4H	Canada/Manitoba Water Development Agreement	Remedial work only with Canada paying 50%.
8.	12-12B-4J	C.P. Rail Bridge — La Riverie	T.B. #40/86-12(b) authorized the payment of $404.8 for the reconstruction of a bridge at Mile 50.1 La Riverie sub-division.
9.	12-12B-4M	C.N. Rail Bridge — Sprague	T.B. #51/86-12(a) authorized the payment of $633.4 for the reconstruction of a bridge at Mile 124.7 Sprague sub-division.
10.	12-12B-5A	Park Infrastructure Replacement	Deferred purchase of the Grand Beach Inn from Grand Beach Investments. Wet, cool weather delayed other projects.
11.	12-12B-5B	Vacation Home Lots	Wet, cool weather delayed projects.
12.	12-12B-5C	Facility Enhancement	Wet, cool weather delayed projects.
13.	12-12B-12A	Canada/Manitoba Agri-Food Agreement	Formulation of new Conservation Districts required extensive negotiations prior to initiating the formulation and voted funds were corresponding not utilized.
	Jobs Fund Initiatives		
14.	12-12B-11B	Canada/Manitoba Forest Renewal Agreement	E.R.I.C. Jobs Fund granted additional authority to spend $354.0 during 1986-87.

Legislators' Index

The department's estimates are usually reviewed in the Legislature in the following order. Please refer to the appropriate page for the discussion of each branch's activities.

	Page
Administration and Finance	
• Resource Allocation and Economics	62
• Public Information Services	45
• Administrative Services Division	3
Regional Services	47
Engineering and Construction	8
Water Resources	70
Parks	36
Lands	32
Forestry	19
Fisheries	12
Wildlife	79
Surveys and Mapping	67
Resource Support Programs	
• Conservation Districts Authority	5